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ABSTRACT

The study reported in the first part had two major goals: the construction of a pupil role interview schedule and the use of this interview to measure the influence of different programs in Project Follow Through on pupil role development. The second part of this report concerns a content analysis done by the Columbia Classroom Environments Project (CCEP) on the interviews of 480 children in the Pupil Role Interview Study during the spring, summer, and fall of 1972. The third part of this report argues that any variable element of the educational environment, be it the initiation of interactions, physical movement, the selection of topics, or any other, can be construed as controlled by the teacher, controlled by the teacher and learner jointly, or controlled by the learner, at or over intervals of time. It is further argued that congruence in the control of the various elements of the educational environment at a given time contributes to the realization of objectives and that teacher controls, joint teacher and learner controls, and learner controls, are each more appropriate for a different category of educational objectives. (Author/JM)

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FINAL PROGRESS REPORT

Contract No. OEC-0-71-0593

COLUMBIA CLASSROOM ENVIRONMENTS PROJECT

Joseph C. Grannis, Director

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
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Teachers College, Columbia University
New York, New York

February, 1973

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CHAPTER I

A COGNITIVE DEVELOPMENTAL STUDY AND EVALUATION OF THE PUPIL ROLE AS DECISION MAKER

Joseph B. Roberts

Background of the Study

This study has two major goals: (1) the construction of a pupil role interview schedule and (2) the use of this interview to measure the influence of different programs in Project Follow Through on pupil role development. In 1970, the present investigator viewed the pupil role from the perspective of personal control versus fate control (Lefcourt, 1966 and Gurin, et al, 1969). However, he soon discovered that current measures of the locus of control construct failed to differentiate the contents of different classroom environments.

Roberts discovered a reference to Leland Van den Daele's developmental study of the ego-ideal in Kohlberg and Mayer's paper on development as the aim of education (Kohlberg and Mayer, 1972. The unpublished version of this paper was first read in 1970). As suggested by Kohlberg, Roberts turned from the study of the pupil role with paper and pencil tests of locus of control to the semi-structured format of Van den Daele's interview.

During the spring and summer of 1972, CCEP interviewed 467 Follow Through and non-Follow Through comparison third grade pupils in 12 geographic sites. The Pupil Role Interview has been developed collaboratively by CCEP and Leland Van den Daele at the Educational Testing Services and is based on an application of his scheme of the developmental

stage of preferential judgment, to the contents of the pupils' school environment. A full account of the development of the present form of the Pupil Role Interview Schedule and its coding manual is given in CCEP's Fourth and Fifth Progress Reports. In this chapter, Roberts discusses the pupil role interview stage analysis, and in Chapter 2, Nordt discusses the pupil role interview content analysis.

The interview has two parts. The first deals with questions eliciting responses about pupils' real and ideal classroom activities, teachers, classmates, home activities that help them in school, rules and materials in the classroom, and the function of school. The second part of the interview deals with Van den Daele's questions about pupils' occupational, material, and social goals. Throughout this report, Roberts calls the first dependent variable "in-class interview response," and the second dependent variable "out-of-class interview response."

STATEMENT OF THE PROBLEM

Principles of Role-taking

The dominant stage of pupil role development has been determined by previous research to be, in part, dependent upon six principles that relate to role-taking opportunities. A list of these prerequisites follow:

1) Role-taking opportunities have been found to require interaction between roles, for example (applying this to the classroom), teacher and pupil, and pupil and pupil. This interaction produces social activities. (Emmerich and Kohlberg, 1963; Kohlberg, 1969).

2) In order to engage in a social activity, a model has to create role-taking opportunities for pupils through the establishment of shared

standards, through the encouragement of participation in dyad and group decisions, through "pointing out to the child the consequences of his action to others and his own responsibility for it...," and through the use of punishment based upon shared standards rather than punishment based upon revenge (Kohlberg, 1969).

3) A certain amount of predictability is the precondition of interaction (Turner, 1962). In the classroom, this predictability is achieved through consistency. Such consistency has been found to occur when clarity of expectations for pupil participatory behavior are present (Himmelweit and Swift, 1969).

4) It has been found that role-taking opportunities occur in the context of group functioning, i.e., securing agreement, acceptance of responsibility, and guarding group norms (Turner, 1962). In such a context, interaction permits role differentiation as well as the use of alternative roles.

5) Role-taking opportunities have been found to occur in the context of mild challenges, for example, when a teacher or a classmate oriented to the authority of the group or to the authority of principles of decision making gives either advice or mild challenges that are one stage above the individual's dominant stage (Blatt, 1969; Kohlberg, 1969).

6) The likelihood of higher role-taking increases after a given level of role development has been strengthened by multiple transactions with others (Mead, 1934; Van den Daele, 1968, 1970; Kohlberg and Mayer, 1972), for example, in settings both in and out of the classroom. This last generalization especially needs to be elaborated.

i. Kohlberg and Mayer state the importance of generalizing a given stage of ego development (related to role-taking) across different

social action contexts involving the ego, in order to build a person's ego strength and to avoid ego regression under stress later in life.

ii. Van den Daele's research identifies the following five contexts of ego-ideal development: occupational, material, social, community, and body.

iii. CCEP inferred that role-taking development in a school context should be approximately parallel to or associated with development in the five contexts identified by Van den Daele.

Hypotheses and Rationale

The researcher, using the aforementioned six principles that related stage of pupil role development to role-taking opportunities as bases, derived rationales for each of the hypotheses presented herewith.

Hypothesis One: A significant relationship would be found between Project Follow Through Programs and in-class interview response.

Hypothesis one was based on the general observation that role-taking opportunities, as defined above, seemed to vary considerably between the classrooms, or the classroom models, of the four Follow Through sponsors included in this study, particularly with respect to role interaction, group functioning, and multiple transactions with others. This observation was based on Maccoby and Zellner's (1970) Experiments in Primary Education, Aspects of Project Follow Through, and on CCEP's own 1970-71 observations in classrooms of three of these sponsors.

Hypothesis Two: A significant relationship would not be found between Project Follow Through Programs and out-of-class interview response.

Hypothesis two was based on the principle of multiple transactions with

others. The out-of-class interview response represents a person's general ego-ideal standards for decision-making. The pupil generalizes his dominant in-class interview response over one content area relative to the ego ideal. In contrast, the pupil generalizes his dominant out-of-class interview response over multiple content areas relative to the ego-ideal. Therefore, the researcher expected that the pupils' out-of-class interview response would be more resistant to influence by the programs than would the pupils' in-class interview response. For the purpose of making an empirical determination of the above assumption and to test the relationship between the in-class and out-of-class interview responses, the investigator included both parts of the interview.

> Hypothesis Three: The children from developmental programs (Bank Street College of Education and University of Florida) would obtain a higher dominant stage of in-class interview response than children from behavior modification programs (University of Oregon and University of Kansas).

Hypothesis three was based especially upon the principles of role interaction, and group functioning. Based again upon Maccoby and Zellner's and CCEP's descriptions of these programs, it appeared that more interaction between teacher and individual pupil, and pupil and pupil would be found in the developmental programs than in the behavior modification programs. The researcher also expected to find greater opportunities for pupils to take alternative roles in the developmental programs than in the behavior modification programs because developmental programs offered greater opportunities for group functioning than did

behavior modification programs.

Hypothesis Four: A significant relationship would not be found between Project Follow Through Programs and non-Project Follow Through Comparison Programs, when the effects of pupils' age, socio-economic status, months in Follow Through and achievement test scores on in-class interview response were partialed out.

Since we have no knowledge of the social environments of the comparison classrooms, this null hypothesis is stated simply to test for differences between Follow Through and non-Follow Through.

Hypothesis Five: A significant relationship would be found between verbal achievement and in-class interview response.

Hypothesis five was based on the principle of role interaction, role-taking opportunities, and group functioning. Each one of these principles required and stimulated verbal communication as well as children's dominant stage of pupil role development. Thus, it appeared reasonable to assume that the higher a child's dominant stage of in-class interview response, the higher would be that child's verbal achievement scores.

PROCEDURE FOR SELECTING THE SAMPLE

The Sample

The research design called for 480 subjects for the Pupil Role Interview Study. It was expected that the selection would include 40 children from eight Follow Through sites and 40 children selected from four comparison sites, as indicated below:

University of Florida:	Richmond, Virginia	40
	Philadelphia, Pa.	40
Bank Street:	Brooklyn, New York	40
	Tuskegee, Alabama	40
Bank Street Comparisons:	Brooklyn, N.Y.	40
	Tuskegee, Ala.	40
University of Oregon:	Tupelo, Miss.	40
	East St. Louis, Ill.	40
University of Oregon Comparisons:	Tupelo, Miss.	40
	E. St. Louis, Ill.	40
University of Kansas:	Philadelphia, Pa.	40
	Trenton, New Jersey	40

Means of Selecting the Sample

The first step in selecting the 480 subjects was the choice of program sponsors. Three of the four sponsors had previously been studied by CCEP as examples of differently structured classroom environments. The fourth (University of Florida) was added because of Roberts' special interest in parent related programs.

The second step in selecting the sample was to consult with the Stanford Research Institute for sites near the Atlantic seaboard which had been given SRI's achievement tests.

The third step in selecting the sample was to request permission to conduct the study from program sponsors, local project

directors, local Parent Advisory Councils, local school superintendents, and local school principals.

The fourth step in selecting the sample was to request three classroom rosters from local project directors.

The fifth step in selecting the sample was to send parental permission slips to all of the parents on these rosters. If not enough of these permission slips were returned in a given site, then follow up requests were distributed to the nonrespondents.

The sixth step in selecting the sample was to select subjects from among those whose parents responded positively to the requests. In those sites where more than the necessary number of positive responses were received, a random selection of an equal number of male and female subjects was made.

Despite consultation with SRI, SRI test scores were not available for six out of eight sites for classrooms involved. In Tuskegee and Tupelo, subjects for interviewing were selected as much as possible from those children (Follow Through and non-Follow Through) who had been tested by SRI.

Distribution of Pupils Actually Interviewed

The breakdown of actual subjects by site follows:

SAMPLE SIZES BY SITES
WITHIN PROGRAM

Program	Site	Number	Number of Schools and Classrooms
Follow Through			
Bank Street College	Tuskegee	39	Three schools, one classroom each
Bank Street College	Brooklyn	39	One school, five classrooms
University of Kansas	Trenton	40	Three schools, one classroom each
University of Kansas	Philadelphia	36	One school, three classrooms
University of Oregon	Tupelo	37	One school, three classrooms
University of Oregon	E. St. Louis	38	Three schools, one classroom each
University of Florida	Richmond	40	Four schools, one classroom each
University of Florida	Philadelphia	39	One school, three classrooms
Control Groups			
Bank Street Comparison	Brooklyn	40	One school, seven classrooms
Bank Street Comparison	Tuskegee	39	One school, two classrooms
University of Oregon Comparison	Tupelo	40	One school, one classroom
University of Oregon Comparison	E. St. Louis	40	One school, one classroom

Date Source and Instrumentation

The investigator has identified (1) the independent variable as educational program, (2) the dependent variables as in-class interview response and out-of-class interview response, (3) the covariates as pupils' age, home setting, months in Follow Through, and achievement. The researcher's definitions of each of these variables follows.

1) The Independent Variable: The investigator limited the definition of educational program to Bank Street, University of Florida, University of Oregon, University of Kansas and control groups. On the basis of Maccoby and Zellner's descriptions of the experimental programs being studied, Bank Street and University of Florida were further classified as developmental programs and University of Oregon and University of Kansas were classified as behavior modification programs.

2) The Dependent Variables: In-class and out-of-class interview response were defined through the use of the Pupil Role Interview Schedule. The first part of the interview schedule was related to the pupils' preferential judgment regarding their classroom activities, teachers, classmates, materials in the classroom, rules in the classroom, and family help in learning. The second part dealt with Van den Daele's questions regarding the pupils' preferential judgments that related to future occupations, future material goals, and future social relations with parents. The research team coded the stages of the responses to the questions through the use of Van den Daele's Manual for the Evaluation of Preferential Judgment and Ego Development (which

appears in appendix one).

Van den Daele's coding scheme is similar to those of Piaget and Kohlberg. They all code the stage of development of a child, and they all orient to the form of a child's judgment rather than the content of that judgment. However, Van den Daele's scheme applies to a broader range of contents than Piaget's or Kohlberg's.

CCSP applied Van den Daele's coding scheme to the preferential judgments of third graders with respect to classroom activities, teachers, classmates, home activities, rules and materials in the classroom. Each response a child made justifying a preferential judgment was given a stage score and a modal stage score for each question in the interview was calculated from the response scores.

The investigator realized that to refer to the pupils' in-class and out-of-class interview response as "dependent variables" apparently did not recognize the question of the match between the educational program and the pupils' ego-norms and ideals as variables that interacted to produce a match as mismatch. However, in the absence of information about the match, a simpler prediction must be made in terms of the greater availability of role taking opportunities leading to higher role development; it is this prediction which is tested in the present analysis.

3) The Covariates: (a) The investigator defined home setting through the use of Hollingshead's occupational index of socio-economic status. The research team elicited information about parents' occupations from the parents themselves on the parent consent slips. The consent slip asked for the occupations of both

the mother and the father. Where both were supplied, the occupation rating higher on the Hollingshead index of occupation was used to represent home setting.

At the time of this writing, the researcher was dissatisfied with current indexes of SES, because they appear to fail to differentiate parents in the same social class group who may have different life styles and different preferential norms and ideals. Thus, the investigator saw the need to develop a parent role interview, as well as a teacher role interview, so that he might make these distinctions and study the research questions that pertain to the match among parents, pupils, and teachers in different educational programs. However, this was not possible within the present study.

(b) The researcher determined the number of months each subject has spent in Project Follow Through from information that was contained in the classroom rosters of Stanford Research Institute and local project directors.

(c) The researcher defined pupils' age by their birthdates. This information was obtained during the interview and from the classroom rosters.

(d) The researcher defined achievement as the scores obtained on Stanford Research Institute's four achievement tests: Wide Range Achievement Test, Numerical, Verbal, and Affect.

1971-72 RESEARCH DESIGN

Classroom Settings in 8 Follow Through Sites and 4 Comparison Sites

		Developmental						Behavior Modification					
		Florida		Bank Street		Bank Street Comparisons		Kansas		Oregon		Oregon Comparisons	
In-Class Interview Stage	Out-of-class Interview Stage	Rich.	Phil.	Brklyn	Tusk.	Brklyn	Tusk.	Trenton	Phil.	Tupelo	E. St. L.	Tupelo	E. St. L.
1	1	Age											
2	2												
3	3	Socio-economic Status of Parents											
4	4												
5	5	Months in Follow Through											
6	6												
7	7	Achievement Test Scores											
8	8												
9	9												
10	10												
11	11												
stage 12	stage 12												

parents in the same social class group who may have different life styles and different preferential norms. Thus, we see the need to develop a Parent Role Interview, so that we may make these distinctions and study the research questions of the match among parents, pupils and teachers.

We have operationally defined our independent variables, and now, we will operationally define our two dependent variables: in-class and out-of-class interview response. Both of these variables are defined through the use of the Pupil Role Interview, the first part of the interview relating to the pupil's preferential judgment about their teachers, their classmates, and materials in the classroom, their rules in the classroom, and their family helping them to learn, and the second part dealing with Van den Daele's questions about the pupil's preferential judgments relating to future occupations, material goals, and social relations. We code the stages of the responses to the questions in the two parts of the interview through the use of Van den Daele's Manual for the Evaluation of Preferential Judgment and Ego Development.

We realize that to speak of the pupils' in-class and out-of-class interview response as "dependent variables" does not seem to recognize the question of the match. However, in our analysis of the content of the interview responses, for example children's satisfaction or dissatisfaction with features of the learning environment, we can treat the environment and the pupils' ego-norms and ideals as variables interacting to produce a match or mismatch. Nordt has analyzed the April, 1972 interviews of children observed with BORIS and IRIS to try out the possibilities of content analysis.

Analysis*

Our current report deals with a presentation and a discussion of findings indicating (1) appropriate psychometric characteristics of the pupil role interview, (2) the results of analysis of variance, where the dependent variables are in-class and out-of-class interview response and the independent variables are programs and sites within program, and (3) the results of the analyses of covariance, where the dependent variables are in-class and out-of class interview response, the independent variables are program and sites within program, and the covariates are pupils' age, socio-economic status, months in Follow Through, and four achievement test scores.

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*Leland Van den Daele of Educational Testing Service and Lawrence Kohlberg of Harvard University gave generous counsel throughout the course of this study. Marcus Lieberman of the Laboratory of Human Development in the Graduate School of Education at Harvard University conducted and supervised all of the computer programming and analyses used in this final report.

APPROPRIATE PSYCHOMETRIC CHARACTERISTICS OF THE PUPIL ROLE INTERVIEW

Data Reliability

In order to establish data reliability, the CCEP's research team re-interviewed approximately 10% of the sample, a week after the initial interview, viz., all the children from the University of Florida site in Richmond, Virginia, which was selected at random. The children were randomly assigned to the interviewers. The order of the presentation was also randomly assigned to the children, that is, parts one and two of the interview schedule were presented in that order to 20 children selected randomly, and parts 2 and 1 were presented in that order to the other 20 children. As shown in Table 1, CCEP's findings show reliability adjusted for differences among tests for in-class interview responses is $r = .636$, and reliability adjusted among tests for out-of-class interview responses is $r = .663$.

Inter-Rater Reliability

The most recent procedure for establishing inter-rater reliability called for all four coders to rate 36 identical items comprising three different interviews conducted during the Spring of 1972. Table 2 shows a reliability adjusted for differences among four raters as $r = .690$. A fifth coder was not included in this test and achieved criterion reliability at a later time.

The Invariant Sequentiality of Stages

To determine the invariant sequentiality of stages of in-class and out-of-class interview response, CCEP used a measure of scalability based on a modified Guttman test for non-cumulative items (Wohlwill, 1963, Leik and Mathews, 1968, Van den Daele, 1968).

Table 1: TEST RE-TEST RELIABILITY FOR FOUR CODERS USING THE ANALYSIS OF VARIANCE APPROACH FOR STAGE OF IN-CLASS AND OUT-OF-CLASS INTERVIEW RESPONSE

Reliability Adjusted for Differences Among Tests for stage of in-class interview response

$$r = .636 \qquad r = \frac{Vp-Ve}{Vp} = \frac{138.00-50.17}{138.00} = .636$$

Reliability Adjusted for Differences Among Tests for stage of out-of-class interview response

$$r = .663 \qquad r = \frac{Vp-Ve}{Vp} = \frac{166.06 - 55.99}{166.06} = .663$$

As the reader can see in Tables 3 and 4, the distribution of subjects' response by modal type cluster in adjacent stages rather than in non-adjacent stages. Hence, it is reasonable to assume that this clustering of response by modal type indicates the sequentiality of these stages and provides support for CCEP's thesis that stages of in-class and out-of-class interview response are developmental.

Interval Rather than Ordinal Scale

The reader can look at the graph of normal deviates in Table 5 and see that there is no radical departure from the horizontal line. Thus, it is reasonable to assume that the stages of pupil role development are on an interval rather than an ordinal scale.

Discriminating Power for Each Item

Table 6 shows that items one through eight -- the in-class interview responses -- are one factor and items nine through twelve -- out-of-class interview responses -- are another factor. Item eight loads on a third

Table 2: INTER-RATER RELIABILITY USING THE ANALYSIS OF VARIANCE APPROACH FOR THE ENTIRE INTERVIEW

Reliability Adjusted for Differences Among Raters

$$r = .690$$

$$r = \frac{Vp-Ve}{Vp} = \frac{108.92-33.73}{108.92} = .690$$

factor and is the least discriminating of the in-class interview responses. This item deals with questioning children about what school is and should be for.

The most discriminating item in the in-class set is item two. This item deals with the questions: What is your teacher like, and what kind of teacher would you like to have?

The out-of-class interview responses to questions about occupational goals, material goals, and social goals are just about equal in discriminating power, with item 10, the first of the two material goals questions being the least discriminating.

Weighting of Stages

In order to increase the sensitivity of the pupil role interview, CCEP decided with the advice of Kohlberg to weight the stages. The weights were obtained by multiplying the percentage of responses at each stage by the stage. This gives CCEP a pupil role maturity score, which is similar to Kohlberg's moral maturity score.

Table 3

PER CENT DISTRIBUTION OF IN-CLASS RESPONSES OF SUBJECT'S CLASSIFIED BY MODAL RESPONSE*

N	6	6	112	90	54	20
stage	3	4	5	6	7	8
3	72	0	2	2	0	0
4	0	74	4	2	1	0
5	18	19	73	13	3	2
6	6	7	15	73	12	9
7	0	0	3	9	73	17
8	4	0	1	1	10	71

*Average per cent of in-class responses on diagonal. Due to a possible lower limit to responses in a third grade population, there were some gaps in responses classified by stage three and stage four.

Table 4

PER CENT DISTRIBUTION OF OUT-OF-CLASS RESPONSES OF SUBJECT's CLASSIFIED BY MODAL RESPONSE*

N	15	5	129	55	43	16
Stage	3	4	5	6	7	8
3	86	0	5	4	2	2
4	0	88	12	0	0	0
5	2	2	83	9	3	1
6	1	1	12	82	4	0
7	1	0	3	5	87	4
8	0	0	0	0	13	87

*Average per cent of in-class responses on diagonal. Due to a possible lower limit to responses in a third grade population, there were some gaps in responses classified by stage three and stage four.

Table 5: GRAPH OF NORMAL DEVIATES OR STAGE AND TRANSITIONAL STAGE BOUNDARIES FOR TWELVE ITEMS

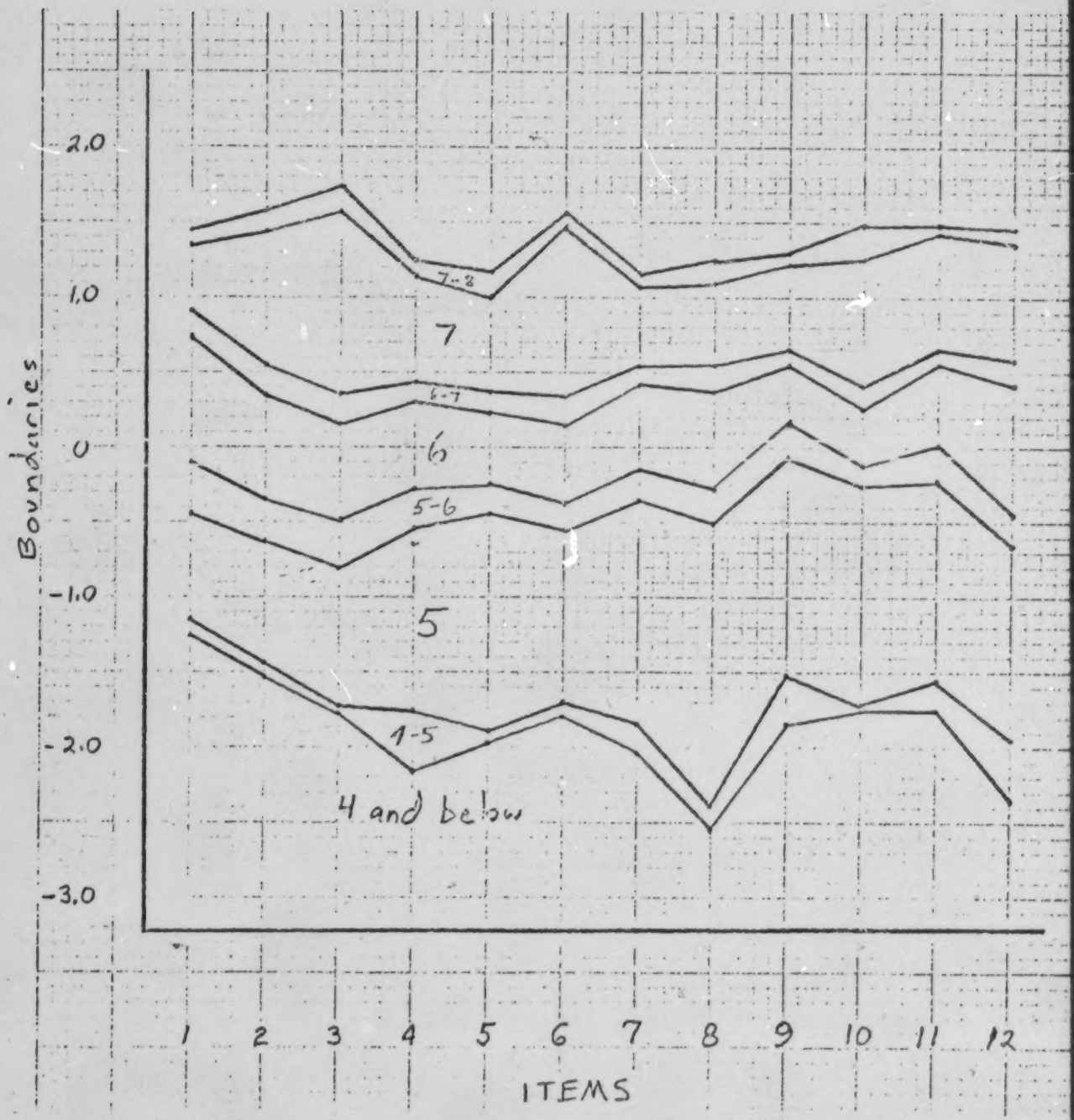

Table 6:

S DISCRIMINATING POWERS

FILE NONAME (CREATION DATE = 01/18/73)

VARIMAX ROTATED FACTOR MATRIX

	FACTOR 1	FACTOR 2	FACTOR 3
ITEM11	0.50172 ✓	0.26372	0.00631
ITEM12	0.67357 ✓	0.33864	0.01037
ITEM13	0.62209 ✓	0.25944	0.23819
ITEM14	0.46962 ✓	0.32714	0.25744
ITEM15	0.51503 ✓	0.21525	0.40287
ITEM16	0.61667 ✓	0.07838	0.49542
ITEM17	0.45371 ✓	0.40672	0.42733
ITEM18	0.03408	0.10761	0.44172 ✓
ITEM21	0.31178	0.60044 ✓	0.40509
ITEM22	0.20108	0.49249 ✓	0.28295
ITEM23	0.33927	0.81135 ✓	-0.00502
ITEM24	0.29284	0.62798 ✓	0.35567

TRANSFORMATION MATRIX

	FACTOR 1	FACTOR 2	FACTOR 3
FACTOR 1	-0.66932	-0.61258	-0.42042
FACTOR 2	0.48025	-0.78847	0.38429
FACTOR 3	0.56690	-0.05531	-0.82193

THE RESULTS OF ANALYSIS OF VARIANCE, WHERE THE DEPENDENT VARIABLES ARE IN-CLASS AND OUT-OF-CLASS INTERVIEW RESPONSE AND THE INDEPENDENT VARIABLES ARE PROGRAMS AND SITES WITHIN PROGRAM

As is shown in Table 7, CCEP interviewed approximately 40 pupils in each of the eight Project Follow Through sites. Tables 8 and 9 show that there was a between program effect on in-class interview response means at $< .01$ level of significance. However, it was inappropriate to test for differences between programs for the out-of-class interview response, since the F ratio for this was not significant. As noted earlier in this report, Roberts expected this differential impact of programs on in and out-of-class interview responses. The remainder of the analysis is meant to clarify the meaning of this first finding.

These tables also show that there was a within program effect on means indicating in-class interview response at the .05 level of significance for sites in the Bank Street Program, sites in the University of Kansas program, and sites in the University of Oregon program but not for sites in the University of Florida programs.

The investigation used the Newman-Keuls procedure to test all possible mean differences indicating in-class interview response for programs (Winer, 1962, p. 309). Table 10 shows that the mean indicating in-class interview response for the University of Florida program was significantly higher than those of the University of Kansas and the University of Oregon but not significantly higher than that of the Bank Street College program.

On the basis of the cognitive developmental theory that the

Table 7: SAMPLE SIZES BY SITES WITHIN PROGRAM FOR DEPENDENT VARIABLES: IN AND OUT_OF_CLASS INTERVIEW RESPONSE

Program	Sites	
Bank Street College	Tuskegee 39	Brooklyn 39
University of Kansas	Trenton 40	Philadelphia 36
University of Oregon	East St. Louis 38	Tupelo 37
University of Florida	Richmond 40	Philadelphia 39

Table 8: TABLE OF MEANS FOR THE DEPENDENT VARIABLE STAGE OF IN-CLASS INTERVIEW RESPONSE BY PROGRAM AND BY SITES WITHIN PROGRAM

Program	Mean
Bank Street College	590.2*
University of Kansas	564.2
University of Oregon	576.9
University of Florida	607.7

Program	Sites	
	Tuskegee	Brooklyn
Bank Street College	563.3	617.1
	Trenton	Philadelphia
University of Kansas	543.9	586.9
	East St. Louis	Tupelo
University of Oregon	596.3	556.9
	Richmond	Philadelphia
University of Florida	592.2	623.6

* The reader can interpret the mean 590.2 as stage 5.902.

Table 9: ANALYSIS OF VARIANCE WHERE THE DEPENDENT VARIABLE IS IN-CLASS INTERVIEW RESPONSE AND THE INDEPENDENT VARIABLES ARE PROGRAMS AND SITES WITHIN PROGRAM

Source of Variation	df	F	P
Between Program Effect	3	4.15	.0067
Within Programs			
Sites in Bank Street	1	8.70	.0035
Sites in Kansas	1	5.41	.0207
Sites in Oregon	1	4.50	.0348
Sites in Florida	1	3.00	.0841
Error	300		
Total	307		

Table 10: TESTS ON MEANS USING NEWMAN-KEULS PROCEDURE

Programs	Kansas	Oregon	Bank St.	Florida
Ordered means	564.2	576.9	590.2	607.7

	Kansas	Oregon	Bank St.	Florida
Kansas		12.7	26.0	43.5*
Oregon			13.3	30.8*
Bank St.				17.5

Sp = 9.16	r = 2	3	4
q.95(r,300)	2.78	3.33	3.65
(Sp)(q.95(r,300))	25.46	30.50	33.43

* indicates signifance less than the .05 level

Since the sample sizes were slightly different for the four programs, the harmonic mean for sample size was used or recommended.

investigator wished to test, it was important to test the combination of the Universities of Kansas and Oregon versus Bank Street College of Education and the University of Florida to determine the relative impact of behavioristic versus developmental based programs on in-class interview response. A simple planned comparison was chosen, as this was the only linear combination that was tested. The difference between the four means indicating in-class interview response showed that the combination of Bank Street College and the University of Florida had the highest stage of in-class interview response. As one can see in Table 11, the value of this difference was equal to 56.80. The resulting T test was equal to 3.09 and with 300 degrees of freedom. This was significant at the .01 level.

Table 11: A PLANNED COMPARISON OF MEANS BETWEEN THE FLORIDA AND BANK ST. VS. KANSAS AND OREGON PROGRAMS

$$t = \frac{di}{Sdi}$$

Where di is a linear combination of means for the desired comparison and Sdi is the standard error for this comparison.

$$di = (-1)(564.2) + (-1)(576.9) + (590.2) + (607.7) = 56.80$$

$$Sdi = \sqrt{6472.6\,(\tfrac{1}{78} + \tfrac{1}{76} + \tfrac{1}{75} + \tfrac{1}{79})} = 18.34$$

$$t = \frac{56.80}{18.34} = 3.09 \text{ with } 300 \text{ df, } P<.01$$

THE RESULTS OF AN ANALYSIS OF COVARIANCE, WHERE THE DEPENDENT VARIABLES ARE IN-CLASS AND OUT-OF-CLASS INTERVIEW RESPONSE, THE INDEPENDENT VARIABLES ARE PROGRAM AND SITES WITHIN PROGRAMS, AND THE COVARIATES ARE PUPILS' AGE, SOCIO-ECONOMIC STATUS, MONTHS IN FOLLOW THROUGH, AND SRI'S FOUR ACHIEVEMENT TEST SCORES

The results of the multiple regression analysis show that the three independent variables: age, SES, and MFT, accounted for only 1.82 percent of the variation in stage of in-class interview response. The three independent variables accounted for only 0.86 percent of the variation in the stage of out-of-class interview response. Therefore, it was inadvisable to do analysis of covariance using these independent variables as covariates, since they account for so small a percentage of the variation of the dependent variables. Although Van den Daele in his 1967 study found that ego-ideal development is a function of age, it is reasonable to assume that the restricte range of the other covariates weakened their impact on the dependent variable

Table 12 shows that stage of in-class interview response is related to Stanford Research Institute's verbal achievement test at the .05 level of significance and to stage of out-of-class interview response at the .01 level of significance. Due to a misunderstanding between SRI and CCEP, only four out of CCEP's 12 sites had been given SRI's four achievement tests: Wide range achievement test, numerical, verbal, and affect.

Table 13 shows the sample size by Follow Through versus non-Follow Through and Bank Street/location in Tuskegee, Alabama versus University of Oregon/location in Tupelo, Mississippi. The sample for this test is smaller than the number of pupils interviewed because of the unavailability of SRI's achievement tes scores for some of the pupils.

Tables 14 and 15 indicate that there is an interaction effect between Follow Through versus non-Follow Through and Bank Street/location versus University of Oregon/location on stage of in-class interview response at the .05 level of significance, although there is no signicant difference between

Follow Through and non-Follow Through in these sites. As can be seen from Table 14, this significant interaction was caused by Bank Street/location having the highest mean for Follow Through and the University of Oregon/location having the highest mean for non-Follow Through. For the stage of out-of-class interview response, the results of the factorial analysis of variance showed no significant difference for Follow Through versus non-Follow Through programs nor for Bank Street/location versus University of Oregon/location, nor was the interaction for this dependent variable significant.

When we use the four achievement tests as covariates, there is no longer an interaction effect, as shown in Table 16 and 17. Therefore, the adjusted means are not presented here as with the analysis of variance, because none of the main effects of interaction were significant, but the information for these calculations is available.

Tests were made for univerate analyses of covariance where the dependent variables were stage of in-class and out-of-class interview response and the independent variables were Follow Through versus non-Follow Through and Bank Street/location versus the University of Oregon/location. For this analysis, six covariates were used -- pupils' age, SES, and four achievement scores. None of the F ratios for either dependent variable taken separately proved to be significant for any of the main effects and the interaction. Tests of significance are available for inspection but are not presented here, because it adds nothing new to the analyses that the two preceding covariate analyses did not add (where age, SES, and MIFT were used as covariates and where the four achievement scores were used as covariates.)

Table 12: INTERCORRELATION MATRIX OF SELECTED STUDY VARIABLES

	Age	SES	Ach1	Ach2	Ach3	Ach4	In	Out
Age	--							
SES	-188	--						
Ach1	102	-141	--					
Ach2	066	-166	732**	--				
Ach3	066	-178	911**	776	--			
Ach4	-190	-144	193	288**	188	--		
In	-052	046	144	171	208*	171	--	
Out	024	018	-039	031	016	128	550**	--

decimal point omitted

* = significant @ .05 for two tail test

** = significant @ .01 for two tail test

df = 102

Table 13: SAMPLE SIZE BY FOLLOW THROUGH VS. NON-FOLLOW THROUGH AND BANK ST. LOCATION AND OREGON LOCATION

	Bank St.	Oregon	
Follow Through	24	31	55
Non-Follow Through	34	15	49
	58	46	104

Table 14: TABLE OF MEANS WHERE THE DEPENDENT VARIABLE IS STAGE OF IN-CLASS INTERVIEW RESPONSE AND THE INDEPENDENT VARIABLES ARE FOLLOW THROUGH VS. NON-FOLLOW THROUGH AND BANK STREET VS. OREGON

	BANK STREET	OREGON	
FT	551.8	547.8	549.5
NFT	530.1	610.6	554.9
	539.1	568.3	

Table 15: FACTORAL ANALYSIS OF VARIANCE WHERE THE DEPENDENT VARIABLE IS STAGE OF IN-CLASS INTERVIEW RESPONSE AND THE INDEPENDENT VARIABLES ARE FOLLOW THROUGH VS. NON-FOLLOW THROUGH AND BANK STREET VS. OREGON

Source of Variation	D.F.	F	D
A: Follow Through vs. Non-Follow Through	1	.09	.7598
B: Bank Street vs. Oregon	1	3.42	.0673
A X B	1	5.60	.0200
Error	100		
	103		

Table 16: FACTORIAL ANALYSIS OF COVARIANCE WHERE THE DEPENDENT VARIABLE IS STAGE OF IN-CLASS INTERVIEW RESPONSE AND THE INDEPENDENT VARIABLES ARE FOLLOW THROUGH VS. NON-FOLLOW THROUGH AND BANK STREET VS. OREGON AND THE COVARIATES ARE FOUR ACHIEVEMENT SCORES

Source of Variation	D.F.	F	D
A: Follow Through vs. Non-Follow Through	1	.29	.5940
B: Bank Street vs. Oregon	1	.24	.6248
A X B	1	2.88	.0932
ERROR	96		
	99		

Table 17: FACTORIAL ANALYSIS OF COVARIANCE WHERE THE DEPENDENT VARIABLE IS STAGE OF OUT-OF-CLASS INTERVIEW RESPONSE AND THE INDEPENDENT VARIABLES ARE FOLLOW THROUGH VS. NON-FOLLOW THROUGH AND BANK STREET VS. OREGON AND THE COVARIATES ARE FOUR ACHIEVEMENT SCORES

Source of Variation	D.F.	F	P
A: Follow Through vs. Non-Follow Through	1	0.89	.3473
B: Bank Street vs. Oregon	1	0.74	.3910
A X B	1	0.21	.6487
ERROR	96		
	99		

DISCUSSION OF THE FINDINGS

Construct Validity of the Pupil Role Interview

From the perspective of cognitive developmental theory, this pilot study has provided four kinds of evidence to support the construct validity of the pupil role interview. The first bit of evidence deals with how Lieberman's factor analysis of the 12 items in the pupil role interview neatly splits these items into two factors. The first eight items relate to in-class interview response, and the last four relate to out-of-class interview response.

The second bit of evidence deals with the pilot study's respectable data reliability, where r equals .636 for in-class interview response and where r equals .663 for out-of-class interview response and with the pilot study's respectable inter-rater reliability, where r equals .690.

The third bit of evidence deals with the relationship between in-class and out-of-class interview response at the .01 level of significance which was predicted earlier and with the relationship between in-class interview response and SRI's verbal achievement test at the .05 level of significance.

The final bit of evidence deals with the invariant sequentiality of both in-class and out-of-class interview response.

These bits of evidence satisfy Piaget's hierarchic model as it has been satisfactorily applied to cognitive, moral, and ego-ideal development in other studies. In our own study in-class interview response

is a subset of the ego-ideal. Van den Daele states, this model, "...demands only sequential invariance as a minimum requirement of hierarchization..." (Van den Daele, 1968).

Van den Daele reviewed the in-class interview questions and suggested that CCEP use four of his ego-ideal questions relating to occupational, material, and social goals. Both he and Lawrence Kohlberg at Harvard University judge the in-class interview questions to be valid in terms of Piaget's hierarchic model.

Practical and Theoretical Implications of the Results of the Study.

CCEP hypothesized that there would be a relationship between Project Follow Through Programs and Pupil Role Development, and the findings confirmed this hypothesis. In particular, the University of Florida program is significantly higher at the .05 level relative to stage of in-class interview response, when compared to University of Kansas and Oregon behavioral modification based programs. Bank Street is not statistically different from the University of Florida Program, however, Bank Street is also not statistically different from the University of Kansas and Oregon Programs. One might say that relative to stage of in-class interview response, Universities of Kansas and Oregon are low with the University of Florida high and Bank Street in the middle.

The difference between the high and low programs is almost half a stage. The meaning of this can be inferred from the fact that it takes approximately two years for middle class children to progress from one stage to the next in the relevant range of Van den Daele's ego-ideal sequence. A half a stage might be said to represent a year's growth.

Both the developmental based programs were higher than the behavioral modification based programs, relative to stage of in-class interview response. The resulting T test was significant at the .01 level.

To elaborate this finding, CCEP partialed out the effects of the pupils' age, SES, and MIFT on variation in the dependent variable, stage of in-class interview response and found that these covariates accounted for an insignificant amount of the variation in the dependent variable. Unfortunately, CCEP only had achievement test socres for two Follow Through Programs, Bank Street at Tuskegee, Alabama and University of Oregon at Tupelo, Mississippi.

The regression of the four achievement scores on the dependent variables resulted in non-significant F ratios for both variables. These ratios indicate that for the two sites that were given achievement tests, the achievement scores were not strongly related to stage of in-class and out-of-class interview response.

However, the two developmental based programs were significantly higher at the .01 level relative to the stage of in-class interview response than the two behavioral based programs. Thus, it is reasonable to believe that if CCEP had used the four achievement tests as covariates with all four programs, CCEP would essentially obtain the same results.

This finding has several implications for cognitive developmental theory. First, on the basis of program description and Nordt's content analysis of pupil role interview responses, pupil role complexity is greater for the developmental programs than for the behavioral based programs. Second, the greater the role complexity, the greater is the opportunity for choice of role and social role taking: changing one's behavior based on the imputed view of someone else.

Finally, both Kohlberg and Van den Daele see social role taking and the development of concepts of reciprocity as two principal determinants of the development of identification with authority, i.e., the progressive internalization of standards for making decisions. (Kohlberg, 1963, Van den Daele, 1968). Indeed the last chapters in this final report to USOE specify some of the conditions for social role taking and reciprocity in various discussions of pupil involvement and the different distributions of controls over the various elements of the the educational environment.

The Impact of Development on Programs

To understand better the concepts of social role taking and reciprocity, Roberts believes that this pilot study could serve as a baseline for research on the following questions:

> What impact do differently structured learning environments have on teachers' ability to adapt their responses to the developmental status of the individual child? And if there were an impact, what influence does this adaptiveness have upon pupils' most frequent stage of preferential judgment?

These questions could be answered controlling for six covariates: pupils' and teachers' age, months in the program, socio-economic status, and pupils' four achievement test scores, assuming a greater range on these variables than is represented in the present study. The result of this and all of CCEP's research could be applied in the further development of educational programs.

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CHAPTER 2

THE PUPIL ROLE INTERVIEW CONTENT ANALYSIS

Martha S. Nordt

During the spring, summer and fall of 1972, CCEP did a content analysis on the interviews of 480 children in the Pupil Role Interview Study. Background information about the interview study may be found in this and previous CCEP Progress Reports. This chapter deals with four aspects of the content analysis only: (1) purpose, (2) the code, (3) procedure, and (4) analysis of data.

PURPOSE

The most basic questions with which we have been concerned in this content analysis are simply, how do children view their learning environment, and what aspects are most prominent in the child's eye? In pursuing answers to these questions it has become apparent that our data could lead us to more complex information about learner roles, and the influence of Follow Through programs and developmental levels on the pupils' perceptions. Also, we have asked, what is the match between the child's real and ideal learning environment? Each of these questions has been analyzed to a greater or lesser extent. Time and money have restricted the major portion of analysis to the basic questions, as agreed to in the proposal.

THE CODE

Early last spring, a research assistant, Martha Nordt, with experience in coding behavior stream observations for BESIS, began development of the interview content code. The initial thrust for this new

code came from the BESIS categories, therefore a thorough understanding of BESIS was necessary.

Code development began for the first question of the interview, "What kinds of things do you do in your classroom?" The BESIS categories for episode and phase content were modified for this purpose by applying them to the 24 interviews of the fall 1971 pilot study. Problem areas were noted and the necessary adjustments were made.

Unlike the BESIS system, the content code is not divided into first and second priorities (i.e. the first and second priorities of society not of the children). It became apparent that the content code would need third and fourth priorities, so to avoid confusion, a new set of groupings were defined. The heading academic skills includes all the basic skills in the cognitive domain: reading, writing, arithmetic, spelling and language. The broad area of applied knowledge includes science, social studies, art and music. The third area, social, covers all play activities, and positive and negative social interaction. The fourth area includes all activities in the physical domain.

By the end of May a pilot code for Question One, classroom activities, was complete. This code was then tested on about 75 more interviews and all necessary adjustments were made and the code finalized. This exact code was also applied successfully to Question Four, "What sorts of things do you do at home that help you in your classroom?"

With this first phase of code development completed, work began on Question Six, "What are some of the things you use in your classroom that help you to learn?" Again the BESIS categories for materials mode were adapted and extended for this purpose. The materials categories

Code for Question 1 - Classroom Activities and Code for Question 4 - Home Activities

Category 1: Academic Skills

10 academic general; study; homework
11 reading (instruction)
12 reading (free)
13 writing
14 spelling
15 language
16 math
19 tests

Category 2: Applied Knowledge

20 general applied knowledge
21 science
22 social studies
23 art; construction; making things
24 music
25 cooking; trips; projects
26 drama; role playing

Category 3: Social

30 general play
31 games; object play
32 outside play
33 social positive physical
34 social positive non-physical
35 social negative physical
36 social negative non-physical
37 ritual

Category 4: Physical

40 general physical
41 P.E., exercise
42 resting
43 eating
44 chewing gum

Category 5: Environmental Maintenance

50 environmental maintenance

Category 6: Other

60 other
61 watching T.V. and other entertainment
62 nothing
63 teacher
68 I don't know
69 not codable

00 no answer

Code for Question 6 - Classroom Materials

Teacher

01 teacher; other person

Directly Related to Learning

02 symbolic (books)
03 manipulative, academic (rods, beads)
04 academic games (flashcards)
05 A.V. equipment (taperecorder)
06 raw materials (rocks and minerals)
07 live materials (animals)

Functionally Related to Learning

08 instrumental materials (paper, pencils)
09 classroom design, learning related (blackboard)

Indirectly related to learning

10 content area and classroom activity (science, Soc. Stud., reading)
11 the body (hands, head)
12 manipulative, non-academic (block corner)
13 toys (dolls, airplanes, trucks)
14 classroom design, non-learning related (windows, walls)
15 personal (clothes)

Other

16 same as now
17 other
18 I don't know
19 not codable
00 no answer

* Items in parentheses are examples of mode.

were arranged and grouped in a somewhat hierarchical fashion. The range was from most directly related to learning to most indirectly related to learning. The purpose behind this code was to illuminate the child's perception of the learning process. Aside from this, the code is self-explanatory. As with the classroom activities, the materials code was finalized after a trial of about 75 interviews.

The month of June was spent developing a code for Question Two, "Tell me about your teacher, what is she/he like?" This was perhaps the most difficult aspect of the content code to develop. These categories were induced by reading and studying over a hundred interviews. This code reveals the child's perceptions of the teacher's role and the child-teacher relationship. These perceptions fall into ten broad areas: function, instruction, cooperation, assistance, permission, benefactor, behavior control, personal social relationships, teacher desire or preference, and physical aspects. Within several of these areas the code indicates that it occurs in category one, two, three, four five or six. These categories refer to the broad headings of the code for Question One. Therefore, category two indicates applied knowledge etc. For example, an answer coded as category one under instruction would mean, "She teaches me reading/writing/arithmetic." Or an answer coded category three under permission would be, "She lets me play with my friend." As with the other codes this one was tried on about 75 interviews before it was finalized.

In July, another research assistant, Fran Aversa, began developing a code for Question Five, "What rules do you have in your classroom?" This code analyzed the structure and content of the rules mentioned by

Code for Question 2 - Teacher Attributes

Teacher Function

10 does work
11 does category 1
12 does category 2
13 does category 3
14 does category 4
15 does category 5
16 does category 6
17 passes things out

Instruction

20 teaches us/me things
21 teaches us/me category 1
22 teaches us/me category 2
23 teaches us/me category 3
24 teaches us/me category 4
25 teaches us/me category 5
26 teaches us/me category 6
27 Instruction, other

Cooperation

30 does things with us/me
31 does category 1 with us/me
32 does category 2 with us/me
33 does category 3 with us/me
34 does category 4 with us/me
35 does category 5 with us/me
36 does category 6 with us/me

Assistance

40 helps us/me do things
41 helps us/me do category 1
42 helps us/me do category 2
43 helps us/me do category 3
44 helps us/me do category 4
45 helps us/me do category 5
46 helps us/me do category 6

Permission

50 lets us/me do things
51 lets us/me do category 1
52 lets us/me do category 2
53 lets us/me do category 3
54 lets us/me do category 4
55 lets us/me do category 5
56 lets us/me do category 6

Benefactor

60 gives us/me things
61 gives us/me materials

Behavior Control

62 gives us/me rewards
63 gives us/me punishment; physical
64 gives us/me punishment; non-physical
65 other behavior control
66 withholds rewards
67 withholds punishment; physical
68 withholds punishment; non-physical
69 withholds other behavior control

Personal Social Relationship

70 kind, good, nice, etc.
71 fun, funny, friendly
72 not mean
73 neutral (o.k., all right)
74 mean, no good
75 hate, dislike, etc.
76 she likes us/me
77 I like her
78 voice
79 other social relationship

Teacher Desire or Preference

80 she likes, general
81 she likes, category 1
82 she likes, category 2
83 she likes, category 3
84 she likes, category 4
85 she likes, category 5
86 she likes, category 6
87 other teacher preference
88 she doesn't like, general

Personal/Physical Aspects

90 general appearance
91 size
92 hair
93 race
94 sex
95 age
96 clothes
97 possessions
98 neat
99 other teacher attributes

Other

01 teaching quality (she teaches good
02 description of work - non-teacher related
03 subject taught (math teacher)
04 like Ms._____; like the one I have
05 other
06 I don't know
07 not codable
00 no answer

the children. Unfortunately this code was not tested and finalized in time for the actual coding of the 400 interviews. Lack of time forced us to dismiss this valuable and insightful portion of the content code.

Therefore, the final content code included a scheme for analyzing four interview questions and the match between real and ideal. Each of these four questions was part of a pair of questions, the first asking about the child's real learning environment, and the second about the child's ideal. For example, "What kinds of things do you do in your classroom?" would be followed by, "If you could do anything you like in the classroom, what would you like to do?" The match between these two answers was coded. This same procedure followed the questions about the teacher, the home, and materials. Match was rated as follows: complete mismatch, partial mismatch, match-mismatch, partial match, and complete match. The convertions used to code each type of match will be discussed later under coding procedures.

PROCEDURE

During July and August Martha Nordt and Fran Aversa coded the interviews of 400 children. In order to fully understand the analysis that follows, a discussion of coding and examples thereof is necessary. Also a word about reliability. Nordt and Aversa established reasonable reliability for each part of the code using a sample of 50 interviews. The results are recorded in Table 1.

Table 1: CODER RELIABILITY

Question 1a	93%
Question 1c	95%
Match 1	96%
Question 2a	81%
Question 2b	88%
Match 2	90%
Question 4a	90%
Question 4b	86%
Match 4	86%
Question 6a	89%
Question 6b	86%
Mode Match	80%
Materials Match	78%

The process of coding involved a series of similar steps. All the coded information was recorded on FORTRAN sheets. Each pair of real - ideal questions was coded and followed by the match code for that pair. This procedure was repeated four times. Many children gave multiple answers to each question. Space was allotted for up to four answers per question. Only a very few children mentioned more items in which case, only the first four were coded. Match was coded as follows:

5. complete match - if all real and ideal items are the same.
4. partial match - if more than half of the ideal items are the same as real items.
3. match-mismatch - if exactly half of the ideal items are the same as real items.

2. partial mismatch - if less than half of the ideal items are the same as real items.

1. complete mismatch - if all of the ideal items are different than the real items.

Match for the materials question was coded twice, the first match in reference to the materials mode and the second in reference to the actual materials mentioned. Occassionally it will be noted that a rating of complete match was given though it appears that the items are not the same. This occurred when a child made the ideal statement that he wanted things the same as in his real environment. No matter what else was included in the statement, this was always coded as a complete match.

Most of the coding was done from hand or typewritten transcripts of the interview recordings. It was possible to code approximately 25 interview transcripts a day. Unfortunately, more than 100 interviews were not transcribed and therefore had to be coded directly from the tapes. This was very time consuming and not more than 10 could be coded in a day. Including re-interviews about 530 interviews were coded altogether and this took approximately six weeks. The following pages contain 3 sets of sample responses to the interview questions under consideration. Following the sample responses is a sample coding sheet.

When the content coding was complete Martha Nordt worked with Joseph Roberts to record all the other data (age, sex, Follow Through program, developmental level, etc.) on another set of FORTRAN sheets. This in itself took several weeks to complete. By early fall all the data had been keypunched and was ready for the computer and analysis.

Sample 1

Q. Okay, what kinds of things do you do in class?

A. We do math, we do language, we do spelling, we go to art.

Q. Are those the things you like to do?

A. Yes.

Q. If you could do anything at all in the classroom, what would you like to do?

A. Play.

Q. Well, why would you like to do that?

A. Play dodgeball.

Q. Okay, but why would you like to play dodgeball?

.....continue probe.....

Q. Okay, tell me something about your teacher. What's she like?

A. She's nice.

Q. What do you mean by nice?

A. Like if somebody is doing something that you like you call her nice.

Q. Okay, if you could have any kind of teacher you wanted, what kind of teacher would you like?

A. Like the same teacher, she let's us play outside.

Q. Why would you like a teacher like that?

.....continue probe.....

Q. Okay, what sorts of things do you do at home to help you in the classroom?

A. Make things.

Q. What sorts of things would you like to do at home to help you in your class?

A. Make things for the class, to share with them.

Q. Why would you like to do that?

.....continue probe.....

Q. What are some of the things that you use in your classroom to help you learn?

A. Number lines.

Q. Anything else?

A. Scrap paper to add and subtract.

Q. What sort of things would you like to have in class to help you learn?

A. Blocks to help us subtract.

Q. Why would you like to have blocks?

.....continue probe.....

Sample 2

Q. Okay, what kinds of things do you learn in your classroom?

A. I learn like science, I learn about how to do experiments and how to tell how old wood is.

Q. Is that what you like to do?

A. Yes.

Q. Okay, if you could do anything in the classroom that you would like, what would you like to do?

A. Ride a bicycle.

Q. Would it be more important to ride a bicycle or do experiments?

.....continue probe.....

Q. Okay, tell me something about your teachers, what kind of people are they, what are they like?

A. They're nice.

Q. Okay what makes them nice?

A. The way they act.

Q. If you could have any kind of teacher you wanted, what would you want your teacher to be like?

A. A math teacher.

Q. What kind of person would you like them to be?

A. My friend.

Q. You'd like them to be your friend. Why would you like to have a teacher who was your friend?

.....continue probe.....

Q. Okay, what sorts of things do you do at home that help you in the classroom?

A. I make stuff and I bring stuff to our science class.

Q. What sorts of things could you do at home that would help you in the classroom?

A. Do my work.

Q. Why would you do that?

.....continue probe.....

Q. Okay, what are some of the things that you have in your classroom that help you to learn?

A. Our alphabet, that helps us to learn, and multiplication tables.

Q. Alphabets and time tables. What things would you like to have in your classroom to help you learn?

A. Sometimes I wish I had my mother.

Q. Why would you like to have your mother?

.....continue probe.....

Sample 3

Q. Okay, what kind of things do you do in your classroom?

A. I do mathematics, language and science.

Q. Are those the things you like to do?

A. Yes.

Q. If you could do anything in class you wanted to do, what would you like to do?

A. Clean up the room.

Q. Anything else?

A. No.

Q. Well, why would you like to clean up the room?

.....continue probe.....

Q. Tell me something about your teacher, what is she like?

A. She helps us do our reading, our spelling, our English and our math.

Q. If you could have any kind of teacher that you wanted, what kind of teacher would you have?

A. A substitute teacher.

Q. A substitute teacher? What kind of substitute teacher?

A. A lady.

Q. A lady substitute teacher? Why would you like a substitute?

.....continue probe.....

Q. What kinds of things do you do at home that help you in the classroom?

A. Work on the, the arithmetic.

Q. What kinds of things could you do at home that would help you in the classroom?

A. How to, how to put up the window shades. Clean the windows, sometimes we gotta clean the windows.

Q. And why would you do those things?

.....continue probe.....

Q. Okay, what are some of the things you use in the classroom to help you learn?

A. I use a number line to help me get my answers.

Q. What other things do you use?

A. I use a number line and I use red square blocks to see how many I need, and count to eleven, and count numbers up.

Q. Ummm, well what things would you like to have in your class?

A. A number line.

Q. Anything else?

A. No.

Q. Why would you like to have a number line in your class?

.....continue probes....

SAMPLE CODING SHEET

2-16

I.D. #	1a. REAL CLASSROOM ACTIVITIES	1c. IDEAL CLASSROOM ACTIVITIES	2a. REAL TEACHER ATTRIBUTES	2b. IDEAL TEACHER ATTRIBUTES	4a. REAL HOME ACTIVITIES	4b. IDEAL HOME ACTIVITIES	6a. REAL CLASSROOM MATERIALS	6b. IDEAL CLASSROOM MATERIALS
SAMPLE ONE	05 MATH 14 SPELLING 15 LANGUAGE 23 ART	31 PLAY 31 GAMES	70 NICE	53 LIKE NOW 53 PERMISSION	52 MAKING THINGS	34 MAKING THINGS 34 SOCIAL POSITIVE	08 SYMBOLIC 08 FUNCTIONAL	03 MANIPULATIVE
MATCH 1			1 MISMATCH		5 2 MATCH		3 MATCH - MISMATCH	
SAMPLE TWO	22 SCIENCE 05 MATH	32 OUTSIDE PLAY	70 NICE	71 MATH TEACHER 37 FRIENDLY	22 SCIENCE 12 MAKING THINGS	10 HOMEWORK	02 SYMBOLIC	01 TEACHER/PERSON
MATCH 2			1 MISMATCH		1 2 MISMATCH		1 0 2 MISMATCH	1 1 MISMATCH
SAMPLE THREE	22 SCIENCE 15 LANGUAGE 16 MATH	50 ENVIRONMENTAL MAINT.	41 ASSISTANCE 70 NICE	94 SUBSTITUTE 04 SEX	11 MATH	50 ENVIRONMENTAL MAINT.	03 MANIPULATIVE 02 SYMBOLIC	02 SYMBOLIC
MATCH 3			1 MISMATCH		1 1 MISMATCH		1 0 MISMATCH	3 MATCH - MISMATCH

CONTENT ANALYSIS

A basic crosstabulation program was used for the analysis of the content data. We crossed program and developmental level with content and condensed content. This procedure yielded three types of percentage figures as well as a raw score: 1) an overall raw percent, 2) a percent of children, and 3) a weighted percent. The procedure used in weighting was as follows. Each child was allowed a total score of 1 per question. If he made 3 responses to that question, each response counted as 1/3, or if he made two responses each response counted 1/2. Likewise a score of 1/4 was given for each of 4 responses to the same question and a score of 1 for a single response.

Chi Squares were computed for all the weighted rows and a majority were significant at the .005 level or better. Unfortunately, due to the multi-answer nature of this data, the real use and signficance of the chi square is questionable except on the match tables where single scores were given. It is perhaps best to view this data as merely descriptive, but in no way does that make it less interesting.

Analysis by Program

Table 2 is a complete description of the childrens responses to the questions about classroom activities. The table includes weighted (W%) and percent of pupil (P%) scores for all programs and for both real and ideal questions. Differences between programs can be compared by reading down each column. By locating the same cell under each heading the profile of specific programs can be analyzed. Judging by our previous knowledge of Bank Street, Bushell and Engelmann-Becker classrooms the childrens responses about their real classroom activities

Table 2: CLASSROOM ACTIVITIES BY PROGRAM

	General Academic				Reading			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	8	25	7	10	19	60	13	17
Bushell	16	33	10	11	15	54	11	18
Engelmann-Becker	9	22	6	8	26	62	15	23
Univ. of Florida	9	25	7	11	11	34	4	6
Comparison	4	14	6	9	13	46	10	14

	Free Reading				Writing			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	2	10	9	13	6	21	1	3
Bushell	.3	1	1	1	13	42	8	13
Engelmann-Becker	1	4	5	7	5	20	7	14
Univ. of Florida	2	8	4	4	7	20	5	8
Comparison	1	6	6	7	6	22	2	4

	Spelling				Language			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	4	13	.9	2	5	17	3	6
Bushell	5	19	0	0	0	0	.6	1
Engelmann-Becker	7	28	1	6	17	62	3	8
Univ. of Florida	3	9	1	1	6	22	.6	1
Comparison	11	41	4	6	11	40	3	5

Table 2: CLASSROOM ACTIVITIES BY PROGRAM (cont'd)

	Math				Tests			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	22	68	16	21	.3	1	0	0
Bushell	20	63	5	9	0	0	0	0
Engelmann-Becker	21	72	3	9	0	0	0	0
Univ. of Florida	23	63	19	23	0	0	0	0
Comparison	21	77	10	16	2	6	.6	.6

	General Applied Knowledge				Science			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	0	0	.4	1	3	8	1	1
Bushell	0	0	.6	1	2	9	2	2
Engelmann-Becker	0	0	0	0	.5	2	0	0
Univ. of Florida	0	0	.6	1	3	11	1	1
Comparison	0	0	0	0	4	16	2	3

	Social Studies				Art & Construction			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	6	23	1	2	5	18	13	18
Bushell	1	3	0	0	4	14	9	14
Engelmann-Becker	.2	1	0	0	3	10	9	14
Univ. of Florida	1	4	0	0	7	23	8	11
Comparison	4	16	0	0	6	21	10	14

Table 2: CLASSROOM ACTIVITIES BY PROGRAM (cont'd)

	Music				Cooking, Trips, Projects			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	.6	3	0	0	1	4	0	0
Bushell	.3	1	1	1	0	0	0	0
Engelmann-Becker	0	0	3	4	0	0	0	0
Univ. of Florida	1	4	.6	1	.6	2	1	1
Comparison	2	8	2	3	0	0	0	0

	Drama; Role Playing				General Play			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	0	0	0	0	4	12	8	10
Bushell	0	0	1	1	10	32	27	31
Engelmann-Becker	.2	1	0	0	2	8	13	19
Univ. of Florida	0	0	.4	1	6	20	12	17
Comparison	.1	.6	.9	1	1	4	10	11

	Object Play; Games				Outside Play			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	5	17	11	12	1	5	1	1
Bushell	4	12	5	9	2	7	3	4
Engelmann-Becker	1	4	5	7	0	0	0	0
Univ. of Florida	6	8	16	20	1	5	3	5
Comparison	1	5	11	7	.3	1	1	2

Table 2: CLASSROOM ACTIVITIES BY PROGRAM (cont'd)

	Social Positive, Non-physical				Social Negative, Physical			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	.9	2	1	1	0	0	0	0
Bushell	.7	2	3	5	.7	3	3	4
Engelmann-Becker	2	8	7	13	0	0	0	0
Univ. of Florida	.9	3	.6	1	.3	1	0	0
Comparison	.7	2	5	7	.4	1	.9	1

	Ritual				Physical Condensed			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	0	0	0	0	.9	4	2	3
Bushell	0	0	0	0	1	4	0	0
Engelmann-Becker	.3	1	0	0	0	0	2	2
Univ. of Florida	.6	2	0	0	3	9	1	1
Comparison	0	0	0	0	1	4	1	2

	Environmental Maintenance				Other			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	0	0	0	0	.7	3	.4	5
Bushell	.9	3	0	0	0	0	4	5
Engelmann-Becker	.6	2	0	0	0	0	16	18
Univ. of Florida	0	0	1	1	3	4	9	10
Comparison	.9	3	.5	.6	3	3	12	13

Table 3: CLASSROOM ACTIVITIES CONDENSED BY PROGRAM

	Academic Skills				Applied Knowledge			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	68	97	54	63	17	54	17	22
Bushell	71	95	37	44	8	23	15	20
Engelmann-Becker	89	100	44	50	4	15	12	17
Univ. of Florida	64	96	42	46	13	36	12	17
Comparison	73	96	44	48	17	47	15	20

	Social			
	Real		Ideal	
	W%	P%	W%	P%
Bank Street	11	31	22	25
Bushell	17	46	42	48
Engelmann-Becker	6	19	25	34
Univ. of Florida	16	42	33	39
Comparison	4	14	26	28

are not at all surprising, though in some categories they differ greatly. The categories of general academic, reading, writing, spelling, language, science, social studies and general play show the greatest differences under real classroom activities.

In examining the children's preferences for their ideal classroom activities it is interesting to theorize about the reasons for their choices. There are two which are most striking: 1) choice because the activity is usually desired or 2) choice because the activity involves success and/or pleasure. This is particularly apparent in the condensed tables. Note how Bank Street has the highest percent request for academic skills. According to the BESIS data, of the 3 programs observed there, Bank Street has the highest level of integrated activity. Perhaps integration, the combining of first and second priority (see Fifth Progress Report, Chapter 2) makes learning skills more interesting. On the other hand Bushell children show a decided preference for play. Is this an indication that programmed instruction is not especially interesting or fun for the children? And perhaps Engelmann-Becker's comparatively greater request for positive social interaction is caused by the extreme lack (according to BESIS) of it in Engelmann-Becker classrooms.

Bushell's emphasis on the social domain has led to some further investigation in the area of role perception. Bushell children scored very high in the areas of general academic and play. This is particularly noticeable when the three play categories are condensed. This unusual emphasis in two areas leads to the consideration that perhaps Bushell children only perceive two dominant role opportunities in their learning environment, work or play. This theory is supported by

knowledge of the Bushell token economy, and its earn-spend characteristic.

The match (for explanation of match see p. 9) between real and ideal responses for classroom activities indicates that most children are consistently mismatched, with Bushell, Engelmann-Becker and comparison children leading. The more child centered programs, Bank Street and University of Florida appear to be more matched or adaptive to the children.

Table 4: MATCH FOR CLASSROOM ACTIVITIES BY PROGRAM

	Complete-Mismatch	Partial-Mismatch	Match-Mismatch	Partial-Match	Complete-Match
Bank Street	43%	34%	19%	1%	4%
Bushell	50	32	10	4	2
Engelmann-Becker	49	30	7	5	7
Univ. of Florida	37	36	16	6	2
Comparison	48	31	6	4	4

% of children Significant at .0026

Table 5 gives the weighted (W%) and percent of pupil (P%) scores for the real and ideal questions about teacher attributes. As with the preceding table program comparison can be made by reading down each column, or a particular program's profile can be read by locating the same cell under each category. The score for percent of pupils tends to show the most interesting differences. There are two interesting observations which can be made about the real teacher responses. It appears that Follow Through in general makes a positive impact upon the social affect of the child-teacher relationship. More Follow Through children made more responses in the social category than did comparison

Table 5: TEACHER ATTRIBUTES BY PROGRAM

	Function				Instruction			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	1	3	1	1	4	13	3	13
Bushell	.6	1	0	0	2	5	0	0
Engelmann-Becker	1	4	0	0	5	11	.3	1
Univ. of Florida	2	4	.6	1	5	10	2	4
Comparison	4	5	1	1	7	15	5	9

	Cooperation				Assistance			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	2	5	.6	1	9	19	1	1
Bushell	.7	2	0	0	5	9	1	3
Engelmann-Becker	.3	1	0	0	8	16	3	4
Univ. of Florida	1	3	.4	1	5	11	3	5
Comparison	.5	1	.3	1	5	10	3	5

	Permission				Behavior Control			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	5	14	6	9	5	9	2	5
Bushell	9	16	3	8	7	17	3	7
Engelmann-Becker	8	14	4	5	5	13	2	4
Univ. of Florida	9	20	5	10	7	14	4	7
Comparison	7	14	3	6	7	15	5	10

Table 5: TEACHER ATTRIBUTES BY PROGRAM (cont'd)

	Social				Physical			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	45	68	50	61	6	7	8	11
Bushell	51	76	56	67	5	9	10	9
Engelmann-Becker	45	72	44	57	7	16	12	17
Univ. of Florida	40	70	44	55	8	11	11	12
Comparison	35	61	30	41	8	12	14	12

	Other *			
	Real		Ideal	
	W%	P%	W%	P%
Bank Street	13	14	19	21
Bushell	8	9	24	24
Engelmann-Becker	9	13	33	37
Univ. of Florida	10	11	28	31
Comparison	12	15	36	39

*Almost the entire % in each cell here is from responses for a specific type/name of teacher. For example: "I want a teacher like Miss Jones." or "I want Miss Jones."

children.

Another interesting observation can be made by comparing the categories and order of categories mentioned most to least by the different programs for real teacher. About 75% of the answers given by Bushell, Engelmann-Becker, University of Florida and comparison children fall within the same four categories. The order of most mentioned to least mentioned is also the same. The category mentioned most is "nice" under the heading social. The next category mentioned most often is permission or behavior control. The category for teacher desire or preference is mentioned third and the naming of a specific teacher (other) is the fourth area of greatest concern. However, Bank Street children don't respond in this same manner except for the first category of "nice." Is this an indication that the child-teacher relationship is significantly different in Bank Street classrooms? Perhaps the following diagram will make this clearer.

	Bank Street	Bushell	Engelmann-Becker	Univ. of Florida	Comparison
1.	"Nice"	"Nice"	———	———	——→
2.	Specific Teacher	Permission & Behavior Control	———	———	——→
3.	Permission & Behavior Control	Teacher desire	———	———	——→
4.	Assistance	Specific teacher	———	———	——→

There are a number of interesting observations which can be made about the ideal teacher responses but these will be discussed later in conjunction with the analysis of ideal teacher by developmental levels with programs.

The real and ideal teacher match is in a more positive direction than the match for classroom activities, however, a majority of children are still mismatched. Table 6 gives the match and condensed match scores.

Table 7 shows the weighted (W%) and percent of pupils (P%) scores for the real and ideal questions about home activities. This table shows only the condensed category figures. The starred (*) categories or columns indicate notable differences to which attention should be directed. Many of the response patterns here tend to be similar to those for classroom activities. The reader will be left to examine this table, and Table 3, home activities match, without further comment.

Table 6: MATCH FOR TEACHER ATTRIBUTES BY PROGRAM

	Complete-Mismatch	Partial-Mismatch	Match-Mismatch	Partial-Match	Complete-Match
Bank St.	42%	18%	10%	1%	16%
		60%		17%	
Bushell	34	8	21	2	26
		42		28	
Engelmann-Becker	39	16	16	1	20
		55		21	
Univ. of Florida	34	17	28	3	18
		51		21	
Comparison	42	12	9	4	14
		54		18	

% of children

Significant at .0026

Table 7: CONDENSED HOME ACTIVITIES BY PROGRAM

	Academic Skills*				Applied Knowledge			
	Real		Ideal		Real		Ideal*	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	72	88	71	81	4	8	11	18
Bushell	62	77	61	69	3	9	2	4
Engelmann-Becker	72	86	65	70	3	7	5	8
Univ. of Florida	66	82	58	62	6	12	8	11
Comparison	70	84	51	56	5	10	7	12

	Social*				Physical			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	11	23	7	15	1	4	.4	1
Bushell	21	37	18	26	4	8	0	0
Engelmann-Becker	9	20	3	6	2	4	2	2
Univ. of Florida	10	20	13	17	2	5	2	2
Comparison	13	24	9	12	.4	1	1	3

	Environmental Maintenance				Other			
	Real		Ideal		Real		Ideal*	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	8	11	2	3	5	11	9	10
Bushell	3	6	3	4	7	12	17	21
Engelmann-Becker	4	10	4	5	10	14	21	23
Univ. of Florida	4	7	4	5	11	13	15	16
Comparison	3	6	4	5	8	10	28	28

Table 8: MATCH FOR HOME ACTIVITIES BY PROGRAM

	Complete-Mismatch	Partial-Mismatch	Match-Mismatch	Partial-Match	Complete-Match
Bank St.	43%	16%	21%	2%	12%
Bushell	39	15	17	2	12
Engelmann-Becker	38	9	14	5	16
Univ. of Florida	51	7	9	2	12
Comparison	39	5	12	1	19

% of children Significant at .003

Tables 9 and 10 give the weighted (W%) and percent of pupils (P%) scores for the question about classroom materials. The reader will recall from an earlier discussion that this question and code are designed to illuminate the child's perception of the learning process.

In examining both the weighted and percent of pupils scores for the category, materials directly related to learning (see Table 10), it is immediately evident that the pupils in the child-oriented programs, Bank Street and University of Florida, very often report materials that are deliberately designed for learning. 81% of the Bank Street children mention materials that are directly related to learning, and 68% of the University of Florida children mention such materials. Only 58%, 57% and 55% of the Bushell, Engelmann-Becker and comparison children mention materials directly related to learning. These figures are well supported by the weighted percents also: Bank Street - 63%, University of Florida - 54%, Bushell - 45%, Engelmann-Becker - 41%, and comparison - 42%. 12% of the Engelmann-Becker children and 14% of the comparison children mention the <u>teacher</u> as a learning material. Due to the more traditionally

Table 9: SELECTED CLASSROOM MATERIALS BY PROGRAM

	Teacher				Symbolic			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	3	9	6	8	33	53	20	30
Bushell	4	8	12	13	37	54	30	37
Engelmann-Becker	8	12	13	14	37	53	36	46
Univ. of Florida	4	7	7	9	31	46	27	35
Comparison	8	14	11	14	37	53	29	37

	Manipulative				Academic Games			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	21	34	13	19	6	9	8	10
Bushell	6	13	4	4	2	4	1	1
Engelmann-Becker	4	6	2	2	0	0	0	0
Univ. of Florida	17	23	11	16	5	6	4	5
Comparison	2	5	4	5	1	1	.3	.6

	Instrumental Materials				Content Area of Classroom Activity			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Bank Street	5	14	3	6	20	33	11	16
Bushell	9	18	3	8	33	42	25	28
Engelmann-Becker	10	31	12	20	21	26	14	19
Univ. of Florida	13	23	5	7	13	17	12	15
Comparison	11	19	6	10	19	30	12	16

Table 10: CONDENSED CLASSROOM MATERIALS BY PROGRAM

Teacher

	Real		Ideal	
	W%	P%	W%	P%
Bank Street	3	9	6	8
Bushell	4	8	12	13
Engelmann-Becker	8	12	13	14
Univ. of Florida	4	7	7	9
Comparison	8	14	11	14

Materials Directly Related to Learning

	Real		Ideal	
	W%	P%	W%	P%
Bank Street	63	81	42	51
Bushell	45	58	37	44
Engelmann-Becker	41	57	40	50
Univ. of Florida	54	69	43	50
Comparison	42	55	36	44

Materials Functionally Related to Learning

	Real		Ideal	
	W%	P%	W%	P%
Bank Street	5	14	4	8
Bushell	10	19	4	8
Engelmann-Becker	20	32	13	20
Univ. of Florida	14	24	5	7
Comparison	12	20	7	12

Materials Indirectly Related to Learning

	Real		Ideal	
	W%	P%	W%	P%
Bank Street	22	36	17	24
Bushell	37	46	31	36
Engelmann-Becker	22	29	18	24
Univ. of Florida	17	24	15	20
Comparison	24	37	16	22

Other

	Real		Ideal	
	W%	P%	W%	P%
Bank Street	7	9	32	33
Bushell	4	5	16	17
Engelmann-Becker	10	11	16	17
Univ. of Florida	10	11	30	31
Comparison	14	17	30	32

structured nature of these classrooms, this is perhaps a good answer to the materials question. Here the teacher is a primary source of knowledge. Engelmann-Becker is also high in the area of materials functionally related to learning (paper, pencils). Perhaps this reflects the program's written emphasis with its daily "take-home" assignments.

In the condensed category, materials indirectly related to learning, Bushell has scored significantly higher than the other programs. This difference is almost entirely accounted for in one category, content area/classroom activity. 33% of the weighted answers, and 42 % of the pupils in the Bushell program responded in this area. With this exception, the distribution of answers in categories under materials indirectly related to learning was fairly equal across programs.

In responding to the question about ideal materials many of the children had difficulty. It appears that the children have a particular perception of the learning process and do not really know what else to suggest. All the scores seem to flow up or down rather uniformly across programs relative to their real scores. However, for all programs there are rather large increases under the condensed category other. This reflects answers such as "wanting the same as now," extraordinary inventions (general other) and a large increase under "I don't know" and not codable. All in all, the children do not seem to have any greatly different ideal alternative to the learning process.

Match for the materials question was coded in two ways: 1) mode match and 2) materials match. Mode match is just that, the match between the mode of symbolic, manipulative, instrumental etc. The materials match means the match between the actual items mentioned. For example, a real response of reading books and spelling books and an ideal response

of a science book would be coded as a complete match under mode (all items are symbolic) and a mismatch under actual materials (spelling and reading books are not the same as a science book). Table 11 gives the scores for mode match, and Table 12 for materials match.

Table 11: MATERIALS MODE MATCH BY PROGRAM

	Complete-Mismatch	Partial-Mismatch	Match-Mismatch	Partial-Match	Complete Match
Bank St.	23%	6%	15%	10%	22%
Bushell	30	2	25	0	28
Engelmann-Becker	22	5	21	1	33
Univ. of Florida	34	3	17	2	25
Comparison	23	4	19	2	26

% of Children Significant at .003

Table 12: SPECIFIC MATERIALS MATCH BY PROGRAM

	Complete-Mismatch	Partial-Mismatch	Match-Mismatch	Partial-Match	Complete-Match
Bank St.	32%	3%	6%	6%	26%
Bushell	50	6	2	3	24
Engelmann-Becker	32	9	13	4	25
Univ. of Florida	47	2	9	2	20
Comparison	35	5	8	4	21

Analysis by Developmental Levels: Classroom Activities, Home Activities, Materials.

This discussion of content by developmental levels will be organized somewhat differently than the preceding discussion of content by program. The questions about classroom activities, home activities, and materials will be considered together and only briefly. The teacher attributes question will be discussed separately and in greater detail. This question seems to yield more interesting results and therefore has been analyzed more extensively.

Tables 13 through 19 report the weighted and percent of pupil scores for classroom activities, home activities, materials and match for each in the same manner used earlier, with the addition of an expected score in the last row of each category. The distribution across categories on these tables is not nearly as striking as the distribution across levels. Levels five, six and seven tend to respond very much alike, while level eight is very different. Generally the scores for levels five, six and seven cluster around the expected score and level eight stands out above or below. For example, under real classroom activities: reading, it is expected that 56% of the pupils will respond. Levels five, six and seven respond 58%, 56% and 58% respectively, while level eight only responds 48%. Also, under ideal home activities: academic skills, the weighted expectation is 62%. Levels five, six and seven score 61%, 60% and 59% and level eight scores very high at 83%. This pattern of differentiation at level eight occurs quite regularly throughout all the data.

It is perhaps natural that level eight responds differently than levels five and six due to the developmental changes which occur between

Table 13: SELECTED CLASSROOM ACTIVITIES BY DEVELOPMENTAL LEVEL

General Academic

	Real		Ideal	
	W%	P%	W%	P%
Level 5	8	18	6	9
6	8	26	6	8
7	6	20	8	11
8	13	36	10	12
Expected	8	22	7	9

Reading

	Real		Ideal	
	W%	P%	W%	P%
Level 5	17	58	14	20
6	16	56	12	16
7	18	58	8	16
8	14	48	11	16
Expected	17	56	12	17

Free Reading

	Real		Ideal	
	W%	P%	W%	P%
Level 5	2	6	4	6
6	2	6	2	3
7	2	7	6	8
8	5	16	10	12
Expected	2	7	5	6

Language

	Real		Ideal	
	W%	P%	W%	P%
Level 5	8	28	3	5
6	9	32	4	6
7	11	36	2	4
8	6	24	5	8
Expected	9	31	3	5

Math

	Real		Ideal	
	W%	P%	W%	P%
Level 5	21	68	11	16
6	22	75	6	9
7	22	73	15	25
8	22	68	9	12
Expected	22	71	10	15

Science

	Real		Ideal	
	W%	P%	W%	P%
Level 5	3	12	2	2
6	3	10	0	0
7	4	13	1	2
8	2	4	0	0
Expected	3	11	1	1

SELECTED CLASSROOM ACTIVITIES BY DEVELOPMENTAL LEVELS

(continued)

Art & Construction

	Real		Ideal	
	W%	P%	W%	P%
Level 5	7	22	7	9
6	5	18	12	17
7	4	16	8	14
8	3	12	15	24
Expected	6	18	10	14

General Play

	Real		Ideal	
	W%	P%	W%	P%
Level 5	4	11	12	16
6	5	17	21	24
7	6	19	10	14
8	3	12	4	4
Expected	7	15	14	18

Social Positive

	Real		Ideal	
	W%	P%	W%	P%
Level 5	1	3	3	4
6	1	4	4	5
7	2	6	3	5
8	3	12	7	12
Expected	1	4	4	6

Academic Skills Condensed

	Real		Ideal	
	W%	P%	W%	P%
Level 5	72	97	49	53
6	75	98	37	42
7	74	100	47	55
8	77	96	50	56
Expected	74	98	45	51

Applied Knowledge Condensed

	Real		Ideal	
	W%	P%	W%	P%
Level 5	14	41	12	16
6	13	35	16	22
7	11	37	11	17
8	9	32	17	28
Expected	13	33	14	19

Social Condensed

	Real		Ideal	
	W%	P%	W%	P%
Level 5	11	27	29	33
6	10	31	36	42
7	13	32	29	34
8	11	32	21	24
Expected	11	30	31	36

Table 14: Match for Classroom Activities by Developmental Levels

	Complete-mismatch	Partial-mismatch	Match-mismatch	Partial-match	Complete-match
Level 5	46%	36%	10%	2%	3%
6	54%	28%	10%	2%	3%
7	47%	28%	10%	13%	2%
8	32%	40%	28%	0%	0%
Expected	48%	33%	11%	4%	3%

% of pupils significant at .0001

Table 15: HOME ACTIVITIES CONDENSED BY DEVELOPMENTAL LEVELS

Academic Skills

	Real W%	Real P%	Ideal W%	Ideal P%
Level 5	68	81	61	66
6	67	83	60	68
7	73	90	59	65
8	69	88	83	88
Expected	68	84	62	68

Applied Knowledge

	Real W%	Real P%	Ideal W%	Ideal P%
Level 5	7	15	7	11
6	3	9	7	10
7	7	14	5	10
8	0	0	3	8
Expected	5	11	7	11

Social

	Real W%	Real P%	Ideal W%	Ideal P%
Level 5	11	23	13	17
6	14	25	11	16
7	15	27	13	20
8	20	44	5	8
Expected	14	27	11	17

Environmental Maintenance

	Real W%	Real P%	Ideal W%	Ideal P%
Level 5	6	9	4	6
6	3	6	1	2
7	1	4	2	4
8	0	0	0	0
Expected	4	8	3	5

Other

	Real W%	Real P%	Ideal W%	Ideal P%
Level 5	4	6	11	13
6	10	14	19	22
7	1	4	16	17
8	8	16	8	8
Expected	6	10	15	17

Table 16: MATCH FOR HOME ACTIVITIES BY DEVELOPMENTAL LEVELS

	Complete-mismatch	Partial-mismatch	Match-mismatch	Partial-match	Complete-match
Level 5	46%	10%	12%	4%	17%
6	43	10	12	10	16
7	52	4	18	1	11
8	32	20	20	4	16
Expected	45	11	14	4	16

% of pupils

significant at .0001

Table 17: CONDENSED MATERIALS BY DEVELOPMENTAL LEVELS

Teacher

Materials Directly Related to Learning

	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Level 5	7	11	10	12	49	66	43	53
6	7	11	9	10	46	60	38	43
7	4	10	12	15	53	70	44	55
8	3	8	12	12	64	68	54	60
Expected	6	11	10	12	49	64	41	50

Materials Functionally Related to Learning

	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Level 5	12	21	7	11	28	41	20	25
6	12	23	6	10	26	38	26	34
7	13	23	7	13	24	32	16	19
8	11	12	0	0	18	20	18	24
Expected	13	22	6	11	26	37	21	27

Materials Indirectly Related to Learning

Other

	Real		Ideal	
	W%	P%	W%	P%
Level 5	4	5	21	28
6	6	9	21	27
7	5	9	20	27
8	4	4	16	16
Expected	5	7	21	22

Table 18: MATERIALS MODE MATCH BY DEVELOPMENTAL LEVELS

	Complete-mismatch	Partial-mismatch	Match-mismatch	Partial-match	Complete-match
Level 5	23%	4%	21%	2%	32%
6	33	1	21	1	26
7	26	5	24	7	21
8	32	8	8	0	44
Expected	27	5	21	3	29

% of pupils Significant at .0001

Table 19: SPECIFIC MATERIALS MATCH BY DEVELOPMENTAL LEVELS

	Complete-mismatch	Partial-mismatch	Match mismatch	Partial-match	Complete-match
Level 5	33%	7%	10%	5%	23%
6	46	3	4	4	25
7	46	5	5	4	23
8	40	16	12	0	24
Expected	42	7	8	4	25

% of pupils significant at .0001

preoperational and concrete operational stages (for more detailed explanation of levels see Chapter 1). However, according to Van den Daele's scheme this change occurs between levels six and seven. This content data seems to indicate that level seven is a very weak concrete operational operational because their answers are similar to those of preoperational levels five and six.

Analysis by Developmental Levels: Teacher Attributes

The distribution of responses by levels for the teacher attributes question follows the same pattern as for the questions about classroom and home activities, and materials; level eight tends to respond differently than levels five, six and seven. In noting the specific content of some of the level eight responses this difference seems logical. Level eight is characterized as "Functional Utilitarianism." The rationale for a level eight preference is its "easier, cheaper, better, more useful, etc." The ideal teacher for many level eight pupils is the one who maintains order so that it's easier to work, or who gives help so that learning is easier, or one who teaches or instructs so the pupil can learn faster. Level eight seems to be distinguished not only by their rationale of choice but by the content of the choice. This also appears true to some extent for level seven, "Hedonistic Avoidant," for whom the ideal teacher is one who withholds punishment and controls.

An analysis of the ideal teacher responses by program reveals that Bank Street children seem to perceive more possible teacher roles. This determination was made by locating the number of categories in which at least 7% of the responses occurred. When grouped together these categories (teacher roles) accounted for an average of 90% of all responses.

Table 20: CONDENSED TEACHER ATTRIBUTES BY DEVELOPMENTAL LEVELS

	Function				Instruction			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Level 5	2	2	2	2	4	10	3	5
6	2	3	0	0	6	14	5	7
7	2	4	1	1	6	16	2	7
8	1	4	4	4	0	0	7	9
Expected	2	3	1	1	5	12	4	7

	Cooperation				Assistance			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Level 5	1	2	.2	1	9	18	3	5
6	1	2	0	0	5	11	1	2
7	1	3	1	3	4	7	1	1
8	1	4	0	0	14	32	12	17
Expected	1	3	.2	1	7	14	3	4

	Permission				Benefactor			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Level 5	5	12	3	5	2	6	0	0
6	9	16	5	8	1	2	.2	1
7	8	13	8	14	1	3	0	0
8	5	12	1	4	0	0	4	4
Expected	7	15	4	8	1	4	1	1

Table 20: CONDENSED TEACHER ATTRIBUTES BY DEVELOPMENTAL LEVEL (cont'd)

	Behavior Control				Personal Social Relationship			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Level 5	5	11	3	6	42	67	41	50
6	7	12	2	3	49	74	50	62
7	11	25	8	13	39	72	42	62
8	11	24	7	13	51	85	35	48
Expected	7	16	4	8	44	72	44	56

	Teacher Desire or Preference				Physical Aspects			
	Real		Ideal		Real		Ideal	
	W%	P%	W%	P%	W%	P%	W%	P%
Level 5	16	20	1	2	7	11	15	17
6	9	14	0	0	7	12	11	13
7	9	15	0	0	10	19	16	18
8	5	8	2	4	6	12	4	13
Expected	11	17	.5	1	7	12	12	13

	Other			
	Real		Ideal	
	W%	P%	W%	P%
Level 5	8	11	30	31
6	5	8	27	29
7	7	10	21	26
8	4	4	23	26
Expected	7	9	28	30

Bushell and Engelmann-Becker children perceive the fewest roles and University of Florida and comparison children rank second.

Table 21: NUMBER OF PERCEIVED IDEAL TEACHER ROLES BY PROGRAM

Bank St.	Univ. of Florida	Comparison	Bushell	Engelmann-Becker
1. Social	1. Social	1. Social	1. Social	1. Social
2. *Other	2. Other	2. Other	2. Other	2. Other
3. Physical	3. Physical	3. Physical	3. Physical	3. Physical
4.**Authority	4. Authority	4. Authority	--	--
5. Instruction	--	--	--	--

*Other = naming a specific person or wanting someone like a specific person.
**Authority = combined scores for permission and behavior control.

Developmental levels also influence the average number of perceived teacher roles. Level eight children perceive five roles, level seven children perceive four roles and levels five and six perceive three possible teacher roles.

Table 22: NUMBER OF PERCEIVED IDEAL TEACHER ROLES BY LEVELS

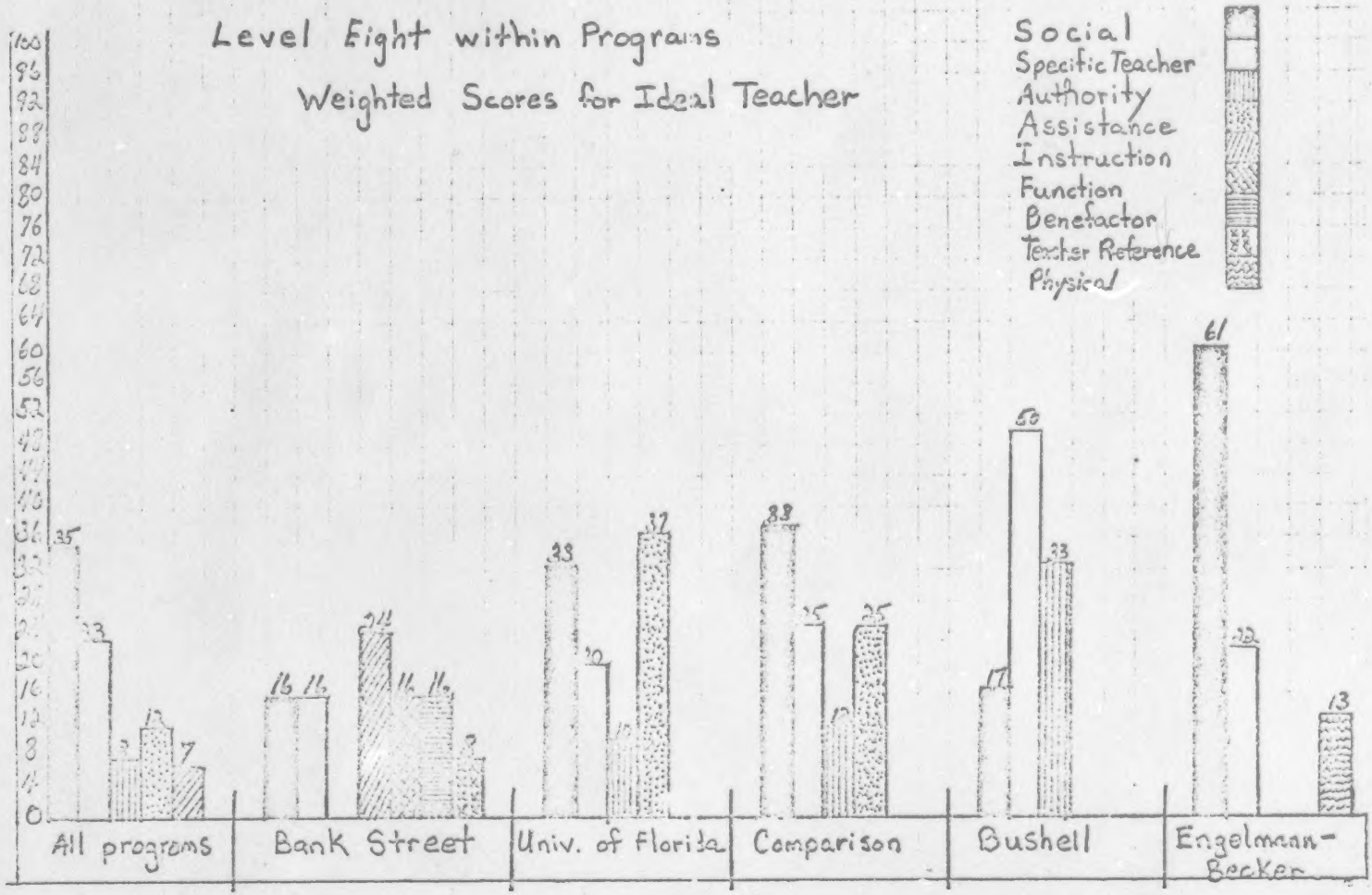
Level 5	Level 6	Level 7	Level 8
1. Social	1. Social	1. Social	1. Social
2. *Other	2. Other	2. Other	2. Other
3. Physical	3. Physical	3. Physical	3. Authority
		4.**Authority	4. Assistance
			5. Administering

*Other = naming a specific person or wanting someone like a specific person.
**Authority = combined scores for permission and behavior control.

Table 23

Level Eight within Programs

Weighted Scores for Ideal Teacher



In examining the ideal teacher responses both by level and by program it appears that these two variables have a definite influence upon each other and therefore upon responses. This has been revealed by an analysis of ideal teacher responses by levels within programs. These tables have been examined extensively but are much too voluminous to reproduce here, however Table 23 shows one example of level response within programs. There is no sure way to determine which has the greater influence, program or level, or when each is more influential, therefore a more sophisticated statistical analysis is needed. However there is one interesting observation about the possible "match" between program and developmental level which can be made with reference to the number of perceived teacher roles. If one looks at the number of perceived teacher roles for each level within each program the level which perceives the greatest number of roles is not always level eight but varies by descending levels in accordance with number of roles perceived by program. Perhaps this is an indication that each program has its peak influence at one level thereby causing that level to have a more differentiated view of the learning environment.

Table 24: LEVEL PERCEIVING THE GREATEST NUMBER OF TEACHER ROLES WITHIN PROGRAMS

	Level 5	Level 6	Level 7	Level 8
Bank Street				X
Univ. of Fla.			X	X
Engelmann-Becker			X	
Bushell		X		
Comparison	X			

CONCLUSION

This interview content study has revealed several interesting things: 1) program influences the child's perception of his real and ideal learning environment, 2) developmental level influences the child's perception of his real and ideal learning environment, and 3) most children's ideal learning perceptions are mismatched with their real learning perceptions. The causes and effect of this appearance of a mismatch on learning and development is an important area for further investigation. This study also seems to indicate that program and level influence each other and the child's perception of the classroom. There is also evidence that this type of interview scheme could be used to study learner role opportunities and perhaps content could be used in the determination of developmental level along with preferential choice.

It is the opinion of this researcher that this type of interview and content analysis could prove to be a very insightful tool into the influence of educational programs and their match with child development. However, further development of the scheme is necessary and the use of a more complex statistical analysis. As a pilot study this interview content analysis has been very useful and hopefully insights here can be further developed in the future.

CHAPTER 3

ANALYSIS AND INTERPRETATION OF THE SPRING, 1971 BEHAVIOR STREAM OBSERVATION OF CHILDREN: TOWARD A POLITICAL PEDAGOGY.

Joseph Grannis and David Jackson

Every pedagogy is centrally concerned with the structuring of controls in the educational environment. Plato and A.S. Neill alike attend to who should have control over the subject matter of learning, the sequencing of studies, students' interactions with teachers and with one another, the materials of learning, the criteria of learning, -- in short, who should control the aims and conditions of education. A powerful approach to the study of educational environments should be one that looks systematically at different distributions of controls over the various elements of an educational environment, and that asks what consequences flow from these distributions.

Up to a point, control has been the focus of numerous studies in micropedagogy, particularly interaction analysis research on the classroom. That is, as the analysis has related teachers' "dominative" or "integrative" behavior to children's interpersonal behavior (Anderson, 1939), or "direct" and "indirect" styles of teaching to students' achievements and attitudes (Flanders, 1970), it certainly has been concerned with controls and their effects. Interaction analysis has been limited on two counts, however. First, it deals only with teacher-student, student-student, or student-material contacts, whereas additional elements are involved in the control of the classroom enviornment, for example the teacher's or student's control

of the use of time.[1] Secondly, the use of interaction analysis has been quite biased. Anderson not only defined domination very negatively, but chose to observe only pupils' resistances to teachers' domination, deliberately omitting to keep account of pupils' submission to it. Flanders not only takes the proportion of indirectness as his basic index of a teacher's style, but he interprets all teacher statements in praise or support of the student as "indirect."

Soar's (1972) research on classrooms in Project Follow Through, conducted almost concurrently with our own studies in Follow Through, has been as broadly concerned with the controls of teaching and learning processes as any research that we know of. Soar has not only used interaction analysis, but has employed schedules to observe the physical movement of teachers and pupils, groupings in the classroom, the focus of attention on teacher or pupil, whether pupils are active or passive, whether topics are set by the teacher or the pupils, the degree to which classroom tasks are differentiated for pupils, etc.[2]

In a later section of this report, we will be taking note of the consistency between Soar's Follow Through findings and our own. Here let us make a simple contrast. Soar has approached the classroom more ecclectically and inductively, and has

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1. Of course, the "structuring" moves recognized in the schemes of Hughes (1959), Bellack (1966), and others, may well concern the use of time. Still, these systems do not ask the simple question, on a regular basis, "Who has control over the students' present time?"

2. Soar acknowledge's Brown (1968) as the source for one of his principal instruments, a Teacher Practices Observation Record developed to measure the consonance of a teacher's practices with Dewey's "experimentalism".

far more data than we have. We have approached the classroom more theoretically and predictively, and have at this point related our relatively sparse data to a more systematic set of dimensions of classroom control.

We will be arguing that any variable element of the educational environment, be it the initiation of interactions, physical movement, the selection of topics, or any other, can be construed as controlled by the teacher, controlled by the teacher and learner jointly, or controlled by the learner, at or over intervals of time. We will argue further that congruence in the control of the various elements of the educational environment at a given time contributes to the realization of objectives, and that teacher controls, joint teacher and learner controls, and learner controls, are each more appropriate for a different category of educational objectives.

Most educational models or programs sanction only a limited range or selected combinations of the control possibilities recognized in our general scheme. Thus, "open" education avoids teacher controlled settings as much as possible, programmed instruction emphasizes joint teacher and learner controls, and so forth. These same models value different educational objectives accordingly.

The principal reason for Project Follow Through's sponsorship of the present study is the fact that Follow Through includes a variety of educational models, each prescribing one or another distribution of classroom controls, and each emphasizing a different constellation of educational objectives. By studying the controls expected of and exercised by the individual learner in classrooms of contrasting Follow Through sponsors, we anticipated being able to clarify and to demonstrate

relationships between these different patterns of control and different objectives.

Through most of the course of this study, including all of the previous progress reports, we have used a much clumsier language for talking about these matters than the language of control that we have now arrived at. This will still be reflected to some extent in the analysis section of the present report, since we must report our findings in terms of the categories that were used for the original coding of the raw data. Nevertheless, the analysis will demonstrate how much order the general concept of control can give to otherwise seemingly chaotic observations. We will then, in the reformulation that follows, present the still more systematic picture of controls that we now discern in the educational environment, and will suggest how this interpretation of controls relates to our own data and Soar's data.

This research, especially when Soar's and our own are considered together, has very strong implications for the design of educational environments. We will consider these in the concluding section of this report.

Rationale for the Choice of a Behavior Stream Observation Methodology.

Very early in the Columbia Classroom Environments Project we made the decision, reflected in our original proposal to Project Follow Through, to observe individual children's goal oriented behavior.[3] At least in a crude way, we understood that

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3. Behavior stream observations of children, behavior stream observations of their teachers, behavior setting observations of their classrooms, a questionaire survey of teachers and aides, interviews of parents, and preliminary interviews of children, were all included in CCEP's Spring, 1971 investigation of the controls in different

our interest in the effects of different patterns of control in the classroom dictated that we observe to see how individual children's activities were initiated, maintained, and terminated. This meant, in Barker and Wright's (1966) terms, keeping track of the spontaneous, instigated, or pressured nature of each of these phases of the individual's activity. The child's interactions with the teacher, other children, and objects would have something to do with this, but so also would the degrees of prescriptiveness associated with the various interactions. Finally, a way had to be found to estimate the immediate contribution of the resulting patterns of control to the child's learning and development, that is, we needed to identify some behavioral index of the quantity and quality of the goal oriented behavior per se.

Barker and Wright's behavior stream observation methodology was especially well suited for all of this. In contrast to interaction analysis, the behavior stream observation concentrates on one individual at a time, and thus follows that individual through time. The behavior stream observation attempts to describe the individual's behavior at the level of his intentional activity, and thus to record the individual's orientation toward different goals. Finally, the observation

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Follow Through and comparison classrooms. With the exception of the behavior setting observations, CCEP's Fourth Progress Report and Fifth Progress Report contain analyses of all of this data. We rejected our behavior setting data as unreliable, and commissioned Rochelle Mayer to conduct a more sophisticated behavior setting observation in different Follow Through classrooms in 1971-72. The resulting BORIS observations are reported in Mayer's chapter in the Fifth Progress Report. Videotapes obtained in the classrooms studied in Spring 1971 were not coded systematically, but were used as the basis for Greene and Logan's identification of non-verbal indices of level of affective arousal, or involvement, which led to the IRIS study coordinated with the BORIS study, also reported in the Fifth Progress Report. Finally, the Spring 1971 preliminary interviews of children led to the construction and administration in 1971-72 of Roberts' Pupil Role Interview, reported in the Fifth Progress Report and this Final Report.

attempts to note all changes of direction in the behavior stream, all interactions, and all potentially intrusive events in the immediate surround of the individual's activity. To code all of these aspects of the individual's behavior live seemed impossible to us at the outset (and still difficult now), but the narrative observation record promised to contain most of the information that we anticipated needing for our analysis.

Behavior stream observations are very expensive. Interaction analysis, and the other observation schemes that, say, Soar has employed in his studies, are typically applied to all members of a classroom simultaneously, and typically employ live coding of the behavior observed. Again, behavior stream observation is applied to only one individual at a time, and a tape recorded narrative must be transcribed for subsequent coding. CCEP estimated in advance that each hour of behavior stream observation would require about 10 hours for transcription and coding, omitting time for the development of the coding system itself. This estimate turned out to be quite realistic.

Obviously, a tremendous amount of skilled manpower is required to produce coded data for just a few subjects. What kind of sample does this result in? Some of our readers might dismiss the study from the outset, simply because only 20 children, one boy and one girl from each of 10 classrooms, are included in the analysis. Others will be more impressed by the fact that some 9,800 30-second intervals of behavior stream have been coded on 62 variables, surely a record for any study of behavior streams to date! As will be reiterated below, we do not claim that the

children we observed are representative, qua individuals, of children in Project Follow Through generally, or even that their classrooms, recommended as exemplars of sponsors' models, are representative of the generality of classrooms of these sponsors. In our most important analyses, however, we have, like Soar, pooled our data for all of the children observed, and have asked what regularities obtain across these classrooms. Precisely because the classrooms are exemplars, while the children were chosen randomly within these classrooms, we think the data is valid for drawing conclusions about children's behavior under various conditions of control that approach the conditions stipulated by our theory. The consistency of our findings with Soar's may add weight to this argument, as should the internal consistency of the patterns in our own data.

Three (3) second grade classrooms were selected by the central and local staffs of each of 3 Follow Through sponsors, the University of Oregon (Engelmann-Becker), the University of Kansas (Bushell), and Bank Street College of Education (Gilkeson). As CCEP wanted to include an "open education" project in the study, and the Education Development Center's Follow Through project elected not to participate, 2 second grade classrooms selected by the Creative Teaching Workshop in New York City were also included.

The Engelmann-Becker program might be characterized as having a "rationally didactic" pedagogy. It emphasizes the learning of generalizable academic skills through a combination of teacher-paced, programmed small-group recitations and child-paced in-class written assignments (the "take-homes," so called because they

are taken home after they have been successfully completed.)

The Bushell program characterizes itself as "behavior analysis." Bushell also stresses the learning of academic concepts and skills, but through each child's progressing individually through programmed workbooks, and with a reinforcement system in which the children receive tokens for approved performances and spend the tokens at least once a day on elected activities, typically "play" as opposed to the "work" of the earn periods.

Bank Street offers a "cognitive-social development" or "interactive" program. The program is equally concerned with the intellectual, the aesthetic, and the social development of the child. It relates not only formal instruction, but art, construction, conversation, and games (as does Engelmann-Becker in this case) to the teaching of skills and concepts, sometimes through the use of integrative themes for the class's activities as a whole.

In theory, the Creative Teaching Workshop classrooms are more oriented to the individual child's exploration of an object-laden learning environment, by comparison to Bank Street's traditional emphasis on the classroom as a society. However, one of the CTW teachers observed by CCEP had been trained at Bank Street, and, conversely, Bank Street has been heavily influenced in recent years by the object orientation of the English Infant School, as represented especially by EDC. At least the Creative Teaching Workshop and Bank Street classrooms that we observed were thus practically indistinguishable from a theoretical standpoint, although, of course, there were marked differences in the styles of the individual teachers.

The Creative Teaching Workshop does differ categorically from the Follow Through programs in a different respect. All of the Follow Through sponsors are responsible and funded for providing curriculum materials and guides, for in-service training and supervision of the teachers and aides, and for developing parental involvement. The Creative Teaching Workshop teachers voluntarily seek assistance at an ongoing open classroom workshop conducted by the sponsor, and the curriculum materials and parental involvement they secure depends mostly on their own and their individual schools' resources. The most tangible reflection of this on the days that we observed was that each of the Follow Through classrooms was staffed by 2 to 4 paid adults throughout the day, whereas the Creative Teaching Workshop classrooms had just one adult, supplemented briefly in one case by a student teacher.

Eliminating one University of Kansas classroom because school-wide events seriously disrupted the sponsor's program during the observation, we are left with 10 classrooms for the present analysis. These classrooms were located in Dayton; East St. Louis; Smithville, Tennessee; Wilmington; Tuskegee; Plattsburg, New York; Philadelphia; the Bronx; Brooklyn; and Manhattan. Most of the children in seven of these classrooms were Black or Puerto Rican; the children in two classrooms (one Engelmann-Becker, one Bank Street) were white; and the children in one classroom (Creative Teaching Workshop) were Chinese-American and Puerto Rican. A majority of the children in each of the classrooms came from low-income families.

While only the child behavior stream observations from these classrooms will be reported here, still the reader should be apprised of the larger context of these

observations. After the program sponsors had nominated the classrooms, CCEP solicited the permission of the local parents, the teachers concerned, and the principals, for our coming to the schools. Arrangements for interviewing parents and professionals were made in advance. Each parent was sent a letter describing our procedures in the classroom, and was asked to telephone a school of Follow Through number if he did not want his or her child observed individually. (No parent called to refuse this permission.) On a Monday afternoon we introduced ourselves to the teacher whose classroom we would observe, answered further questions she had about the observation, and let her withdraw from the list of children who might be observed individually any child whom she thought should not, for a special reason, be selected. We then chose one boy and one girl at random for behavior stream observation, not telling the teacher who had been selected. Usually, but not always, the teacher and the child observed became aware of the choice by the end of the observation. We also on Monday afternoon selected positions for two or three video cameras and put video and microphone cables in place. The equipment was monitored from outside the classroom and was operational each day before the children arrived at school. We did not plan to use the video-tapes as a systematic data base, but to illustrate our observations and to explore problems.

At the beginning of class Tuesday we explained briefly to the children that we had been told theirs was a good classroom, and that we would be talking into recorders in order to keep notes on the classroom. We then asked them to go on with their usual day, and we ourselves proceeded to become as uninteresting as possible.

Except when observers were replacing one another, there were always two, and not more than two, observers in the classroom at a given time. On one day, say Tuesday, the two observers would each be observing one of the two children selected for behavior stream observation, trying to record the children's every move at an intentional level of behavior. A team of six observers usually took turns for this every half hour throughout the children's day in the classroom. On a second day, the same team took turns making a behavior stream observation of the head teacher's day in the classroom, and making a behavior setting observation of the classroom at 5 minute intervals throughout the day. We stayed a third day only if this was necessary to complete our videotaping of the major settings of the classroom. After school on the afternoon of our last day, we played back videotapes for the teacher, her assistants, and any colleague she wanted to invite. We talked informally about the observation with her, trying to respond directly but non-evaluatively to questions the teacher asked of us. The surveys were usually completed within a week of this visit, and we have not since returned to the classrooms. Children from each classroom, including the children observed individually, were interviewed casually by one or another of us, but we did not yet have the developmental interview discussed in Chapters I and 2 of this Final Report.

The behavior stream observation tapes for children have all been transcribed, episoded, and coded for 62 variables in each 30 second interval of the observed day. The average number of minutes we coded for a child was 245, or just over four hours observed time in the classroom. The longest time was almost six hours and

the shortest slightly more than three. When a child left the room for, say, music or recess not under the program auspices, we did not follow. On every trip one observer or another failed to push the record tab at least once on his recorder, and then had to write up the observation from memory afterward. If this record was not codable and could not be supplemented later on by a video record, we lost that time. The school days themselves varied considerably in length. Despite this, and despite variations in the apperceptive masses of the observers, very strong patterns have emerged in the data, not only characterizing programs, but also describing behavior in settings across programs. By this we certainly do not mean that we have pretended to sample what happens in all the classrooms of one sponsor or another. Rather, these exemplar classrooms are different from one another in a variety of ways that correspond to program rationale, and in addition we find some very interesting regularities across these classrooms.

It will be asked first how intrusive we were. Every time the observer reported his subject looking at him, at another observer, or the video equipment present, we coded Watch Observer in the behavior stream transcript. If it was reported as just a glance without the subject's holding his gaze, we coded Glance at Observer. A watch or a glance does not necessarily mean the subject knows he himself is being observed. Also, a watch only infrequently means that the subject is watching for the whole, or even half, of a 30 second interval. The children observed in the Engelmann-Becker program watched or glanced at the observer in 7.3% of the time intervals, in the Bushell program 8.4%, in the Bank Street program 4.7%, and in the CTW program 6.9%. One teacher reported afterward that she was pressed by

the observation, and in this classroom the watches and glances averaged 11.0% for the two children. However, this teacher also told us that she thought the children themselves had behaved in their customary way during the observation, which included many more off-task interactions with other children and with objects than the watches and glances toward the observer. As it turns out, the children in this classroom spent the highest proportion of time, of any of the children observed, in those incongruently structured settings that, across classrooms, we have found result in more off-task behavior. CCEP's observation was, in fact, regularly commended by the teachers for not having disturbed the day of their classroom. We think we know what it means to be highly intrusive, from our one pilot observation in a very ordinary classroom where we seemed to be the only event of interest to the children!

To give some feeling for the level of specificity of the observations, let us reproduce one minute from the day of one of the girls we observed. "Bonnie" is the code name for our subject; "Brown" and "Red" are children Bonnie interacted with, these being the colors of clothing they wore.

Now she is glancing at two girls across the table from her.
The teacher has asked the children to stop what they are doing and gather in a circle.
She grasps the hand of Brown across the table and lets go.
Bonnie stands up in front of her seat and has her book open on her desk in front of her.
She looks up for a moment.
Now she leans across the table, almost lying across the table.
She takes a pencil and writes on Red's paper.
Red is leaning on the table watching intently at what Bonnie is doing.
Now Bonnie takes Brown's paper and erases something that Brown wrote and writes on it.
She seems to be conducting an activity at this table.

She collects the papers of these two little girls, now she puts them inside her book, closes the book.
Now the teacher has told them to take their chairs into a circle.
Bonnie picks up her chair with her right hand, her book in her left hand.
She places the book on the bookshelf, drags her chair with her to the bookshelf.
She puts her book into the bookshelf and takes her chair, lifts it high over her head, upside down, and carries it into what appears to be a circle.
She talks to Brown beside her, she talks to Red.
She turns around very energetically.

During this minute, very early in the day, the observer was not close enough to the subject to report the content of the papers referred to. Later in the day it became clear that Bonnie had been determining whether Red's and Brown's homework papers were complete, and then collecting them for turning in to the teacher at a later time.

As in this instance, we often failed to overhear the substance of the children's conversation with each other, though eye gaze and gestures usually provided a clue as to the object orientation of the conversation.

In general, we found that we could get right on top of the children if they were involved in their activity and there was enough noise to obscure our talking into the cassette. Otherwise, we had to keep our distance, occasionally making a trip across the classroom that passed by the child's location without hovering over the child too indiscretely.

A mechanism was installed in each cassette to signal 60 second intervals to the typists when they transcribed the tapes. The records were further divided into 30 second intervals by counting the lines for each minute and arbitrarily assigning half of them to each 30 seconds. Since we were not sampling events at 30 second

intervals, but rather were coding events over 30 second intervals, this procedure does not invalidate the analysis.

THE ANALYSIS OF THE DATA

The analysis is in four parts. First the variables are defined. Second, the power of the variables to discriminate between settings in the classroom and between different types of learning environments is illustrated by comparing the four educational programs in terms of the variables used in the analysis. Third, the effect of an internally consistent or inconsistent distribution of the conditions of control over learning in a setting on on-task/off-task behavior is analyzed. Finally, the four educational programs are compared in terms of the proportion of the types of congruent and incongruent settings that were observed in their respective classrooms.

A. Definition of the Variables.

The analysis will focus on the relations among the following eight variables: pacing, task options, material responsiveness, child-child interaction, prescription of operations, cognitive complexity, task priority, and on-task/off-task.

1. Pacing is the degree to which the teacher regulates the learner's work or energy output. A setting is coded high pacing when the teacher is continuously present in the learner's setting and continuously makes demands of some sort, for example, when the teacher is leading a discussion, asking questions and calling on children to respond. A setting is coded medium pacing when the teacher regularly enters and leaves the child's immediate vicinity, for example, when the teacher takes turns looking at different children's work during a half-hour work period. A setting is coded low pacing when the teacher is essentially absent from the learner's immediate vicinity, though the teacher and learner may

occasionally interact as a result of either the teacher's or child's initiative.

2. Task Options is the choice the learner has about the particular task in which he/she is engaged. The setting is coded prescribed when the learner has no choice; he/she must do this activity now. The setting is coded open when the child has some choice. For the purposes of this analysis several types of choice were all considered as open. The child may have been given three tasks to do and told to choose which to do first. Control over the scheduling of tasks has been distributed to the learner in this case. The child may have been given two tasks, which will not occupy all of his/her time, and told to complete these at some point during the day. In this second case the learner has been allowed to choose the task which he/she is not required to complete as part of his daily routine. Finally there is the case where the teacher makes no direct prescriptions for the child. He/she is permitted to choose from among the activities available in the classroom. In this last case the teacher is exercising control only through the selection of the activities available to the child in the classroom

3. Material Responsiveness is the degree to which the materials the learner has on hand give him/her feedback, that answer the questions the child has. The materials are coded no feedback when there are no materials in the setting. The materials are coded low feedback when the materials are symbolic, printed symbols on paper, and answers are not provided, for example a math worksheet with no answers nor manipulative materials to help the learner determine the correct answers. The materials are coded high feedback when there are manipulative materials such as

Cuisenaire rods, or when there are answers to symbolic problems provided as in programmed workbooks. Suggestions for reformulating this variable to conform with our theoretical position are contained in a subsequent section.

4. Child-child interaction is the expectation the teacher and children have that the children will be verbally interacting. The setting is coded low interaction when communication between children is prohibited, for example during a recitation when the children are expected to talk only to the teacher. The setting is coded medium interaction when the children are allowed to communicate with each other, but the successful completion of the task at hand does not require them to communicate. The setting is coded high interaction when the task requires the children to communicate in order to complete the task successfully, for example when the children are cooperatively building an airport in the block area. This variable is also reformulated in the discussion section.

5. Prescription of Operations is the choice the learner has over the step-by-step operations of the activity. The setting is coded prescribed operations when the learner has no choice over how the activity is to be done, for example working a series of addition problems just the way the teacher told you to do them. The setting is coded partially prescribed when the child has some choice but limits are specified, for example, a child may write a story about a picture he/she has drawn but may not begin with the words "This is a..." A setting is coded not prescribed when the child has relatively complete freedom as to how he will complete his/her task, for example, building an airport.

6. Cognitive Complexity is the level of organization at which the cognitive content of the task is presented to the learner. The task is coded receive or present information when the child is concerned only with isolated bits of information, commonly called facts, and is not concerned with determining their significance or importance, for example when the teacher is holding a math drill and he/she is simply asking the children how much 2 x 6 is and so on. The task is coded learn skills when the focus of the task is the performance or mastery of an operation, for example when the child is doing a series of addition problems, or completely covering a piece of paper with paint, or learning how to decode words that end with the silent 'e' (tube, hate, kite, vote). The task is coded apply skills when the child is using a variety of skills to construct a complete product, for example writing a story, painting a picture, or building an airport.

7. Task Priority is the importance an activity generally takes in the school curriculum. A task is coded first priority when it involves the teaching of reading, writing, arithmetic, and language arts, the three R's. The task is coded second priority when it involves the teaching of science, social studies, art, music, show and tell, fantasy play, etc. The activity is coded third priority when it includes eating, physical exercise, and maintenance and transition activities such as clean up and standing on line.

8. On-task/off-task is the dependent variable. The child's behavior is coded on-task when her/his behavior is oriented toward the goal of his/her main episode in the behavior stream. Some examples of main episodes are reading a story, painting a picture, completing a math worksheet, eating snack, and getting dressed for recess. When the goal

of the main episode is reading a story, the child is on-task when he/she is reading the story, asking the teacher what a word means, moving to a spot with more light, and writing a word she/he doesn't know in her/his dictionary. Each of these bits of purposeful behavior is meaningful in reference to the general objective: reading the story. The child is off-task when she/he is tieing her/his shoe, helping a friend complete his worksheet, or throwing an airplane across the room, if the child's primary task is reading a story. Anyone of the above behaviors could be judged on-task if the child's primary task was different. Naturally a child can change his task and thereby change the reference for the on-task/off-task judgment. A child might, for example, put his/her reading book aside for ten minutes and help a friend complete his worksheet. All behavior which helps further this objective is then judged on-task and other behaviors such as tieing his/her shoe and throwing paper airplanes are judged off-task.

Off-task behavior has been defined structurally, as an arrest of or departure from main episode oriented activity. It often happens, not by accident, that off-task behavior is not approved by the teacher, or at least is not encouraged by the teacher. However, we have never asked ourselves whether or not a behavior was approved or not in order to judge if it was on-task or off-task behavior. The judgment, rather, was based on whether or not the behavior contributed in some way to the maintenance of goal-oriented activity in the main eipsode of the behavior stream, defining the main episodes as those which take priority in the overall organization of the child's behavior stream. However a behavior episode has been initiated, the goal toward which the individual's behavior

is organized is assumed to be the individual's goal, at least or minimally to the extent that his behavior is consistent with the goal. If this is circular, it is because we have assumed the goal orientation of organized behavior. The sheer length of main episodes, their starting earlier and terminating later relative to other episodes that from time to time run concurrently or alternatively with them, is the surest indication of their priority in the behavior stream of the child.

The first five variables, pacing, task option, material responsiveness, child-child interaction, and prescription of operations can be said to describe the conditions of control over the learning setting. The justification for including material responsiveness among the conditions of control is that a child's having feedback from his material provides him with information that she/he can use to judge the appropriateness of his/her responses, and thereby makes him/her less dependent on the teacher for control of the activity. A many layered description of the distribution of controls in a particular activity consists of specifying one position on each of these five variables for every 30 second interval in the behavior stream record. Each control can change independently but generally stream records a child will be in a particular activity for an extended period of time, say fifteen minutes, and during this time period the conditions of control will not change. The word setting is used to denote the activity and the conditions of control. The setting conditions are the particular positions on the five control variables that describe the activity in which the child is engaged.

B. Comparison of Four Education Programs.

The power of the variables to discriminate between settings and different types of learning environments can be illustrated by comparing

how each of the four educational programs studied distributes the conditions of control in their classrooms. The percentage of time the children observed in each program occupied settings described by each position on the seven descriptive variables is presented in Table 1. Children in the Bank Street and Open classroom programs were observed in low paced settings most of the time, more than 50%. In contrast, the children in the Engelmann-Becker program were observed in high paced settings most of the time, 51%, and the Bushell children most often in medium paced settings, 44.7%. Only the Bushell children were observed in medium paced settings for a substantial portion of the day, and the children from all the programs spent at least a third of their day in low paced settings.

The distribution by task options shows that the Engelmann-Becker and Bushell programs allow the children very little choice in their selection of activities, 12.6% and 12.4% respectively. The Bank Street and Open programs, however, allow the children to select their tasks for a large portion of the day, Bank Street more than Open.

The distribution by material responsiveness shows that all the programs provide children with materials more than 80% of the day. The Bushell program provides children with high feedback, mostly in the form of programmed workbooks, or copying assignments, more often than the other programs, 45.0%. The Engelmann-Becker program only provides the children with high feedback 20.5% of the day. Remember, however, that the Engelmann-Becker children were observed in high paced settings more than the children in the other programs. The absence of feedback from the materials is compensated for by the presence of the teacher.

Table 1 Distribution of Descriptive Variables for Four Programs

	B.S.	Open	EB	Bushell
1. Pacing				
High	35.2	36.1	51.0	21.1
Med.	9.3	12.4	7.0	44.7
Low	55.5	51.5	42.0	34.3
n=	3429	1744	3006	1614
x^2 = 1555	p=.001			
2. Task Options				
Open	59.4	46.2	12.6	12.4
Prescribed	40.6	53.8	87.4	87.6
n=	3377	1742	3000	1609
x^2=2006	p=.001			
3. Mat. Responsiveness K				
None	13.8	17.9	16.3	05.8
Low	43.3	42.8	63.2	49.2
High	39.0	39.3	20.5	45.0
n=	2526	1431	2292	1248
x^2= 1984	p=.001			
4. Child-Child Interaction				
Low	32.1	27.4	66.1	23.5
Med.	56.9	56.7	33.4	73.1
High	11.0	15.9	0.5	3.3
n=	3430	1744	3005	1614
x^2=1557	p=.001			
5. Operations Prescriptiveness				
Prescribed	42.9	31.7	72.5	71.0
Partially Pres.	48.4	41.9	25.6	25.3
Not Pres.	8.7	26.4	1.9	3.7
n=	3430	1744	3007	1615
x^2=1628	p=.001			
6. Cognitive Complexity				
Receive Info.	21.9	12.0	26.8	13.3
Learn skills	26.8	38.9	49.5	57.4
Apply skills	18.4	13.8	3.3	5.1
N.A.	32.9	35.3	20.4	24.2
n=	3430	1744	3007	1615
x^2=1055	p=.001			
7. Task Priority				
1st Priority	46.5	40.5	75.8	64.9
2nd "	41.1	50.3	13.4	23.0
3rd "	12.4	9.2	10.9	12.1
n=	3430	1744	3007	1615
x^2= 992	p=.001			

The distribution by child-child interaction shows that the Engelmann-Becker program prohibited the children observed from talking to one another 66.1% of the day. The other three programs prohibited the children observed from talking less than a third of the day. None of the programs asked the children to work cooperatively for very much of the day. The Engelmann-Becker and Bushell children had a negligible percentage, while the children observed in the Bank Street and Open classrooms spent 11.0% and 15.9% respectively working cooperatively.

The distribution by Operations Prescriptiveness reveals that both the Engelmann-Becker and Bushell programs prescribe the children's activities for most of the day, 72.5% and 71.0% respectively. Only in the Open classrooms were children observed in activities where the operations were completely not prescribed for a significant portion of the day, 26.4%. The children in the Bank Street program were observed about half the time in settings with prescribed operations and half the time in settings with partially prescribed operations, 42.9% and 48.4%.

The distribution by Cognitive Complexity shows that both the Engelmann-Becker and Bushell classrooms emphasized the learning of skills. 49.5% and 57.4% of the day respectively, was spent in settings where the teacher's aim was to teach skills. In contrast, in neither programs were children observed applying their skills for much of the day, 3.3% and 5.1% respectively. The children in the Open classrooms also spent much of the day in settings designed to teach the basic academic skills, 38.9%, but they also spent time in settings where they were applying their skills 13.8% and in settings which had no manifest cognitive content, 35.3%. The children in the Bank Street program divided their time almost equally among the three types of cognitive

complexity and activities which had no manifest cognitive content. The children observed in the Bank Street classrooms spent more time applying the skills they had than did the children in the other three programs. The children in all the programs spent at least a fifth of their day in settings where there was no manifest cognitive content.

The distribution by Task Priority reveals that the children in the Engelmann-Becker and Bushell programs spent most of their day studying first priority subjects. As illustrated in the distribution by cognitive complexity, these two programs stress the learning of the basic academic skills, reading and arithmetic. In contrast the Bank Street and Open programs provided the children with about as much second priority activities as first priority activities. All four programs spent a minimal amount of time in third priority activities, approximately 10%. One would not expect that exemplar classrooms would have much classroom time occupied with maintenance and transition activities.

In every instance the description of the programs in terms of variables which describe the conditions of control in the learning setting conforms to the program rationales. The children in the Bank Street and Open Classroom programs were observed much of the time working in the absence of teacher pacing, selecting their tasks, working with a variety of materials, permitted to converse with each other, and deciding how to complete their task. These children also were observed in tasks with differing cognitive complexities and studying both first and second priority subjects. The children in the Engelmann-Becker program were observed the larger part of the time working in high paced settings which they had no choice in selecting, working with low feedback materials, prohibited

from conversing with each other, and where the operations were also prescribed for them. The Engelmann-Becker children also worked a substantial proportion of the time in low paced settings that had high feedback materials where child-child interaction was permitted part of the time, and the operations were partially prescribed part of the time. The children observed in the Bushell Porgram were observed most of the time in medium or low paced settings that they had no choice in selecting, where the operations were completely prescribed, where they were permitted to converse with each other, and where high feedback materials were provided about half of the time. Like the Engelmann-Becker children they spent most of their time learning skills and studying first priority subjects. The power of the variables to discriminate between the programs and to delineate descriptions which conform to the program rationales validates the variables themselves for the subsequent analysis which applies to all programs equally.

C. The Analysis of Congruent and Incongruent Settings.

CCEP's Second Progress Report (February, 1971) stated as a First Hypothesis, "The knowledge and social orders of effective learning environments will tend to be complementary; the knowledge and social orders of ineffective learning environments will tend not to be complementary." Through various transformations, this hypothesis is now stated, "Congruent (internally consistent) distributions of controls in educational settings will result in more goal oriented behavior by the learners than incongruent (internally inconsistent) distributions of controls."

The rationale of the earlier hypothesis had to do with the congruence

of knowledge and social structures from an epistemological and sociological standpoint; to this was later added the congruence of physical or space/time/object structures with the knowledge and social orders of the learning environment. The transformed hypothesis maintains the interrelationships of the knowledge, social, and physical orders, but essentially rotates the system so to as afford a simpler perspective for their analysis. The rationale can now be stated in terms of an assumption that congruent settings define consistent expectations for the learners' goal oriented behavior and enable the learners' regulation of symbolic, social, and physical interactions appropriate to their goals in the settings concerned.

As discussed at some length in the Fifth Progress Report, CCEP's on-task and off-task variable is a condensation of a 10 category "phase vertical function" variable that coded more specifically the contribution of each 30 second interval of a learner's activity to the goal of a behavior episode, taking into account the relation of the interval to those adjacent intervals that constituted a phase of the episode. 8 categories of this variable are condensed as on-task: integrated, contingent, algorithmic, repetitive, additive, perspective, directive, and provisioning or preparing. 2 categories of the variable are condensed as off-task: passive arrest, or waiting, resting, gazing; and active arrest, or behavior directed toward an alternative to the including or overlapping main episode goal. The most important consideration for the reader at this point is not how discriminations were made within the on-task range of this variable, but what significance can be attributed to the condensed on-task and off-task categories.

In Phillip Jackson, Life in Classrooms, New York: Holt, Rinehart and Winston, 1970, substantial evidence is adduced for pupils' attentiveness as a reliable predictor of the pupils' achievement on tests of their learning in the settings concerned. Other psychologists, among them Piaget, Kohlberg, and J. McVicker Hunt, hypothesize that involvement in the learning setting is a necessary, though not sufficient condition for the contribution of activity in the setting to the learner's development. Greene and Logan's 1971-72 IRIS study of pupils' behavior in different Follow Through classroom settings, coordinated with Mayer's BORIS study of behavior in these same settings, found that involvement, judged by non-verbal indices of affective arousal, correlated positively with on-task behavior as judged by an independent observer in relation to the goals in each of 9 basic types of settings. (See Greene and Logan's chapter in CCEP's Fifth Progress Report.) While we do not equate attentiveness with involvement, we have nevertheless concluded that on-task behavior is a valid and reliable index of attentiveness and involvement. We have further inferred from the research and theory cited above that on-task behavior is valid and reliable as a predictor of the contribution of learners' activity in settings to their achievement and development. Goal oriented behavior, therefore, is to be linked through on-task behavior as an index of the effectivness of an educational setting.

The analysis to be presented here is reported in terms of the percentages of off-task behavior (adding with on-task behavior to 100% of observations in each cell) associated with one or another distribution (a cell) of setting controls. The child behavior stream records for all

four educational programs have been pooled for this analysis.

Coder reliability for the variables analyzed in this report should perhaps have been stated earlier; it is given here for the three coders who, between them, coded all the child behavior stream records. The formula used to compute r took Jackson's coding as the criterion of correctness.

Variable	Jackson and Grannis	Jackson and Nordt
Pacing	.97	1.00
Task options	.87	.86
Materials responsiveness	.83	.97
Child-child interaction	.84	.67*
Operations prescriptiveness	.76	1.00
Cognitive complexity	.84	.81
Task priority	.82	1.00
On-task/off-task	.94	.93

*The coders subsequently conferred and reached higher agreement on child-child interaction; indeed, they conferred on all difficult decisions throughout the coding. The reliability reported here, however, is from the last test before final coding was commenced.

All of the tests of significance in this report are non-parametric, reflecting the fact that ordinal, not interval, categories have been used in the analysis. The assumption of independence of observations that even the non-parametric tests make is violated to the extent that setting conditions, and behavior in settings, are replicated from one 30 second interval to another in the child behavior stream records. For some perspective on this, let us observe that this interdependency of observations over time is quite common in interaction analysis research. Arno Bellack et al, in their classic study The Language of the Classroom, New York: Teachers College Press, 1966, found that they could greatly increase their ability to predict the initiator of a

teaching cycle by using Markov chains to analyze the initiation of temporally ordered teaching cycles. In a sense, this is precisely the structure that our analysis is oriented to, i.e., by coding the persisting conditions of the settings we have oriented to the Markov chains in the phenomena. The concept that has guided us in this is Paul Gump's concept of "pupil occupancy time," i.e., the number of time intervals in which a subject occupies a setting or subsetting with certain characteristics. The analysis of this type of data can escape the inferential limitations of Markov chains by adequate frequency of observations in each cell of the analysis. This frequency depends essentially on the level of significance one wishes to test. Taking Markov chaining into account, we have calculated that a 5% difference in off-task behavior between any two contrasting cells of an analysis would require 800 (on-task or off-task) observations in each cell to reach significance at the .02 level of confidence; with only 500 observations in each contrasting cell, a difference of 7% in off-task behavior would be required to reach .02 significance. Some of the comparisons to be reported below, especially the first, summary test of congruency effects, escape the Markov chain restrictions; others of the tests do not. Like most researchers at this stage of their inquiry, we have to make the best of the data we have and plan future data collections with these parameters more explicitly in mind. The analysis has taken place midway in the development of our thinking from that which was reflected in the analysis of these records in the Fifth Progress Report, and the analysis that would be possible with the revised variables of the discussion section further below. The present

definition of the control variables, i.e., the definition given at the outset of this section, permits the basic classification of settings with consistent distribution of controls into just two types: settings where the controls are distributed congruently for teacher control, and settings where the controls are distributed congruently for learner control. A third basic type of congruent setting, joint teacher and learner control, is conceptually possible through the reformulation of the variables presented in the discussion.

The first analysis that we will report takes a setting to be congruent when one of the following sets of conditions obtains:

Teacher control	Child control		
high pacing	medium pacing	OR	low pacing
prescribed options	open options		open options
none or low feedback materials	high feedback materials		high feedback materials
low child-child interaction	medium child-child interaction		high child-child interaction
prescribed operations	operations partly prescribed		operations not prescribed

A setting is incongruent on one or more variables if the position on that variable is not consistent with the position on the pacing variable. High pacing is inconsistent with open options, high feedback materials, medium and high child-child interaction, andpartially prescribed and not prescribed operations. Medium pacing is inconsistent with prescribed options, none and low feedback materials, low and high child-child interaction, and prescribed and not prescribed operations. Low pacing is inconsistent with prescribed options, none and low feedback, low and medium child-child interaction, and prescribed and partially prescribed operations.

The fifth control variable, operations prescription, has not discriminated significantly between off-task behavior in settings otherwise defined on the first four variables. At this point we must reject the hypothesis for the operations prescription variable, although it will be considered again in the discussion section below. The analysis that follows here uses only the first four control variables, i.e., it uses definitions of congruency and incongruency that do not include the prescription of operations in a setting.* (See note next page)

The analysis with the remaining four control variables, pacing, task options, material responsiveness, and child-child interaction, strongly supports the hypothesis that congruent distributions of controls in learning settings result in more goal directed behavior by the learners than incongruent distributions of controls. Those settings that were congruent on all four control variables had the smallest percentage of off-task behavior, an average of 9.2%. Those settings which had three variables consistent had the second smallest percentage of off-task behavior, an average of 12.4%. Those settings which had only two variables consistent had the third smallest percentage of off-task behavior, an average of 19.8%. Finally those settings which had only one variable consistent (that is, three variables inconsistent with pacing) had the largest percentage of off-task behavior, an average of 30.1%. The average percentage of off-task for settings with congruent and incongruent distribution of controls is presented in Table 2. The tests of significance that were computed on these figures are also presented in Table 2. The percentages are significantly different from each other at the $p = .05$ level of significance, except for the

*The analyses for the congruency hypothesis (Tables 2, 3, and 4) are based on fewer 30 second observation intervals than the 9793 total of intervals coded. (a) Part of the explanation of this is that not all the categories of the original 'materials mode' variable were included in the condensed variable 'materials responsiveness.' Specifically, the categories 'fantasy,' 'motoric,' 'look or listen,' and 'transferring,' were not included in this condensed variable because they were either irrelevant to the question of materials responsiveness or because we could not ascertain the degree of materials responsiveness (feedback). Thus in Table 1 the number of intervals condensed as 'none,' 'low,' or 'high' materials responsiveness totals 7497, whereas the corresponding totals for pacing, task options, and child-child interaction respectively are 9793, 9723 (options could not be determined for some intervals in the original coding), and 9793. (b) A further restriction was placed on the analysis, viz., that intervals associated with third priority content (eating, physical exercise, environment maintenance and transition activities) were not included, thus confining the analysis to first and second priority activities. i.e., those most commonly recognized as having curricular content.

Table 2: AVERAGE OFF-TASK PERCENTAGE FOR SETTINGS WITH CONGRUENT AND INCONGRUENT DISTRIBUTION OF CONTROLS

	Number of Variables Consistent with Pacing			
	4	3	2	1
% off-task	9.2	12.4	19.8	30.1
# of minutes observed	1494	910	752	483

Dunn's (1961) method for simultaneous estimation of predetermined contrasts was applied to the above binomial proportions. The following six contrasts were computed: 1) 9.2-12.4, 2) 12.4-19.8, 3) 19.8-30.1, 4) 9.2-19.8, 5) 9.2-30.1, and 6) 12.4-30.1. All but the first contrast were simultaneously significant at $p=.05$ level of significance.

Olive Jean Dunn (1961), Multiple Comparisons Among Means, J. Statist. Assoc., 56: 52-64.

difference between those settings which had four variables consistent and those which had three variables consistent.

The average effect of the number of congruent variables on on-task/off-task behavior has been presented above. This analysis provides strong evidence for the general hypothesis that congruent (internally consistent) distributions of controls in educational settings will result in more goal oriented behavior by the learner than incongruent (internally inconsistent) distributions of control. Further support for the hypothesis can be provided through a separate analysis of the specific individual effect of each variable on on-task/off-task behavior. The procedure for such an analysis is to compare the percentage of off-task behavior of two settings in which the distributions of controls differ only on the variable of interest. The percentage of off-task behavior for each setting described by different combinations of positions on the four control variables, pacing, task options, material responsiveness, and child-child interaction, is presented in Table 3. Two condensations of categories were undertaken to compute the figures in Table 3. No materials and low feedback materials were combined, and the category is now labeled low feedback. Low and medium child-child interaction were combined, but only under low pacing, andthis category is now labeled medium child-child interaction.

The most striking feature of Table 3 is how many of the high and medium paced incongruent settings did not occur in the classrooms that were observed. High paced, high child-child interaction settings did not occur. The same is virtually true under medium pacing. Three types of incongruent conditions were observed, but for relatively short

time periods in comparison with the congruent conditions:

a) high pacing, high materials feedback -- 74 minutes observed time
vs. vs.
high pacing, low materials feedback -- 1432 min. observed time

b) high pacing, open options -- 123 min. observed time
vs. vs.
high pacing, prescribed options -- 1383 min. observed time

c) high pacing, medium child-child interaction -- 152 minutes observed time
vs. vs.
high pacing, low child-child interaction --1353 minutes observed time

Under low pacing, in contrast, the frequency of incongruent conditions of control nearly matches the frequency of congruent conditions. Two types of incongruent conditions were observed nearly as much as were the congruent conditions of control:

a) low pacing, low materials feedback -- 760 minutes of observed time
vs. vs.
low pacing, high materials feedback -- 867 min. of observed time

b. low pacing, prescribed options -- 687 min. of observed time
vs.
low pacing, open options -- 940 min. of observed time

One type of incongruent condition was observed far more than was the congruent condition: low pacing, medium child-child interaction: 1403 minutes as compared with low pacing, high child-child interaction: 224 minutes of observed time.[4]

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4. From the standpoint of the reformulated variables presented in the discussion below, some of the child-child interaction permitted but not required that is included in this analysis is indeed congruent with low pacing: thus the analysis here has exaggerated the proportion of incongruent settings associated with low pacing. The reason the test of the hypothesis continues to work is that much of the child-child interaction

The samll frequency with which the incongruent conditions of control were observed under high pacing points to the disfunctional character of these settings. The presence of the teacher in high paced incongruent settings enables him/her to experience the effects of disfunctional distribution of controls, and consequently one would expect the teachers in exemplar classrooms to modify the conditions of control so that the settings become functional and congruent. The absence of the teacher from the low paced incongruent settings prevents him/her from experiencing directly the effects of disfunctional distribution of controls. One would therefore expect teachers to be less aware of the high percentage of off-task behavior in incongruent low paced settings than in high paced incongruent settings. Teachers are less aware of and less involved in the relatively high percentage of off-task behavior of low paced incongruent settings, and can therefore tolerate children participating in these low paced incongruent settings, - except when off-task behavior becomes so manifest that teachers have to intervene. In contrast, teachers are more aware of and more involved in high paced incongruent settings, and will be therefore less willing to tolerate children and themselves participating in these high paced incongruent settings.

A less phenomenal explanation would note that, given the present polarization of pedagogies between those stressing teacher control and those stressing child control, the attempt to create a setting of

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allowed but not required in fact had restrictions or dampers on it, particularly in the Engelmann-Becker take-home setting and the Bushell earn setting; when this is separated from that child-child interaction that was fully optional for the children, and child-child cooperation, coded "high" child-child interaction in the present analysis, the test of the hypothesis actually works even better than is shown here.

moderate teacher control, particularly for the teaching of first priority skills and concepts, often results in an inappropriate mix of high and low teacher controls in the setting, rather than a consistently designed setting of medium teacher control. This is considered further in the discussion section below.

Despite the disfunctional character of the incongruent settings, children were observed in them for sufficiently long episodes for us to analyze the separate effects of the individual variables on off-task behavior. The congruency hypothesis states with respect to task options that in high paced settings open task options will result in more off-task behavior than will prescribed options, and that in low and medium paced settings open options will result in less off-task behavior than will prescribed options. Eight contrasts from Table 3 can be made between settings which differ only on the task options variable. The congruent position with respect to options is listed first in each comparison. A (+) indicates the comparison is in the predicted direction, and a (-) indicates the comparison is not in the predicted direction.

+ 1)	prescribed options, high pacing, low feedback, low child-child interaction	7.5%
	vs.	vs.
	open options, high pacing, low feedback, low child-child interaction	8.5%
+ 2)	prescribed options, high pacing, low feedback, medium child-child interaction	13.6%
	vs.	vs.
	open options, high pacing, low feedback, medium child-child interaction	19.6%

Table 3: PERCENTAGE OFF-TASK BEHAVIOR FOR SETTINGS DEFINED BY PACING, TASK OPTIONS, MATERIAL RESPONSIVENESS, CHILD-CHILD INTERACTION.

	Low Child-Child Interaction		Medium Child-Child Interaction		High Child-Child Interaction	
	Low feedback	High feedback	Low feedback	High feedback	Low feedback	High feedback
High pacing, prescribed options	7.5% n=2457	21.0% n=119	13.6% n=184	(20.0%) n=5	--	--
High pacing, open options	8.5% n=130	--	19.6% n=92	(0%) n=23	--	--
Medium pacing, prescribed options	26.0% n=73	(0%) n=24	31.0% n=287	12.8% n=201	--	(0%) n=13
Medium pacing, open options	24.6% n=57	--	6.5% n=46	10.6% n=216	(0%) n=3	--
Low pacing, prescribed options	*	*	34.2% n=893	19.5% n=401	1.4% n=69	(0%) n=10
Low pacing, open options	*	*	23.8% n=505	11.4% n=1007	13.2% n=53	9.5% n=315

* Low and medium child-child interaction combined, under low pacing.

n= Number of 30 second intervals observed.

Rank order correlation coefficient = .72

+ 3) open options, medium pacing, low feedback, low child-child interaction	24.6%
vs.	vs.
prescribed options, medium pacing, low feedback, medium child-child interaction	26.0%
+ 4) open options, medium pacing, low feedback, medium child-child interaction	6.5%
vs.	vs.
prescribed options, medium pacing, low feedback, medium child-child interaction	31.0%
+ 5) open options, medium pacing, high feedback, medium child-child interaction	10.6%
vs.	vs.
prescribed options, medium pacing, high feedback, medium child-child interaction	12.8%
+ 6) open options, low pacing, low feedback, medium child-child interaction	23.8%
vs.	vs.
prescribed options, low pacing, low feedback, medium child-child interaction	34.2%
+ 7) open options, low pacing, high feedback, medium child-child interaction	11.4%
vs.	vs.
prescribed options, low pacing, high feedback, medium child-child interaction	19.5%
- 8) open options, low pacing, low feedback, high child-child interaction	13.2%
vs.	vs.
prescribed options, low pacing, low feedback, high child-child interaction	1.4%

Seven of the eight comparisons were in the predicted direction, lending further support to the congruency hypothesis, specifically with respect to the task options variable.

The congruency hypothesis states with respect to material responsiveness that in high paced settings high feedback materials will result in

more off-task behavior than will low feedback materials, and in low and medium paced settings high feedback materials will result in less off-task behavior than will low feedback materials. Six contrasts from Table 3 can be made between settings which differ only on the materials responsiveness variable. Again the congruent position with respect to materials responsiveness is listed first in each contrast. A (+) indicates the contrast is in the predicted direction and a (-) indicates the contrast is not in the predicted direction.

+ 1)	low feedback, high pacing, prescribed options, low child-child interaction	7.5%
	vs.	vs.
	high feedback, high pacing, prescribed options, low child-child interaction	21.0%
+ 2)	high feedback, medium pacing, prescribed options, medium child-child interaction	12.8%
	vs.	vs.
	low feedback, medium pacing, prescribed options, medium child-child interaction	31.0%
- 3)	high feedback, medium pacing, open options, medium child-child interaction	10.6%
	vs.	vs.
	low feedback, medium pacing, open options, medium child-child interaction	6.5%
+ 4)	high feedback, low pacing, prescribed options, medium child-child interaction	19.5%
	vs.	vs.
	low feedback, low pacing, prescribed options, medium child-child interaction	34.2%
+ 5)	high feedback, low pacing, open options, medium child-child interaction	11.4%
	vs.	vs.
	low feedback, low pacing, open options, medium child-child interaction	23.8%

+ 6) high feedback, low pacing, open options, high child-child interaction	9.5%
vs.	vs.
low feedback, low pacing, open options, high child-child interaction	13.2%

Five of the six contrasts were in the predicted direction, thus lending further support to the congruency hypothesis, specifically with respect to the materials responsiveness variables.

The congruency hypothesis states with respect to the child-child interaction variable that in high paced settings low child-child interaction will result in less off-task behavior than will either medium or high child-child interaction; and in medium paced settings medium child-child interaction will result in less off-task behavior than will either low or high child-child interaction; and in low paced settings high child-child interaction will result in less off-task behavior than will medium child-child interaction. Seven contrasts from Table 3 can be made between settings which differ only on the child-child interaction variable. Again the congruent position with respect to child-child interaction is listed first in each contrast. A (+) indicates the contrast is in the predicted direction, and a (-) indicates the contrast is not in the predicted direction.

+ 1) low child-child interactions, high pacing low feedback, prescribed options.	7.5%
vs.	vs.
medium child-child interaction, high pacing low feedback, prescribed options	13.6%

+ 2) low child-child interaction, high pacing, low feedback, open options	8.5%
vs.	vs.
medium child-child interaction, high pacing low feedback, open options	19.6%

- 3) medium child-child interaction, medium pacing, low feedback, prescribed options	31.0%
vs.	vs.
low child-child interaction, medium pacing low feedback, prescribed options	26.4%
+ 4) medium child-child interaction, medium pacing, low feedback, open options	6.5%
vs.	vs.
low child-child interaction, medium pacing, low feedback, open options	24.0%
+ 5) high child-child interaction, low pacing, low feedback, prescribed options	1.4%
vs.	vs.
medium child-child interaction, low pacing, low feedback, prescribed options	34.2%
+ 6) high child-child interaction, low pacing, low feedback, open options	13.2%
vs.	vs.
medium child-child interaction, low feedback, open options	23.0%
+ 7) high child-child interaction, low pacing, high feedback, open options	9.5%
vs.	vs.
medium child-child interaction, low pacing, high feedback, open options	11.4%

Six of the seven contrasts were in the predicted direction, lending support to the congruency hypothesis, specifically, with respect to the child-child interaction variable.

Considering all 21 contrasts together, 18 of 21 contrasts were in the predicted direction. If the variables had no effect on off-task behavior we would expect that 10 or 11, one-half, of the contrasts would be in one direction and the other half in the other direction. The significance probability that 18 of 21 contrasts were in the predicted direction, under the above assumption is $p=.001$. If the congruency of

the conditions of control did not effect on-task/off-task behavior we would expect 17 of 21 contrast to be in one direction only 1 out of every 1000 sample distributions. This high level of significance allows us to interpret the analysis of the separate effects of the control variables on on-task/off-task behavior as strong evidence in support of congruency hypothesis. One additional statistical test of the congruency hypothesis was computed. The 18 settings presented in Table 3 were ranked according to the percentage of off-task behavior and also ranked according to the number of consistent positions on the four variables. The rank order correlation coefficient was r=.72, significant at the .001 level of significance.

In section B we examined the distribution of the descriptive variables for the four programs. Table 4 presents the percentage of time that each of the four programs were observed in 1) congruent teacher controlled settings, 2) congruent child controlled settings, and 3) incongruent settings. Settings that had either four or three variables consistent were considered congruent settings, and those settings that had two or one variable consistent were considered incongruent settings. The children observed in the Bushell Program spent more time in incongruent, and hence disfunctional settings, than did the children from the other three programs, 53.5%. The children observed in the Engelmann-Becker classrooms spent about 20% less time in incongruent settings, and the children observed in the Bank Street and Open Classrooms spent still less in settings with an inconsistent distribution of controls. As mentioned earlier and discussed at length below, the Engelmann-Becker and Bushell emphasis on the teaching of first priority skills and concepts

Table 4: DISTRIBUTION OF CONGRUENT TEACHER CONTROLLED SETTINGS, CONGRUENT CHILD CONTROLLED SETTINGS, AND INCONGRUENT SETTINGS FOR FOUR PROGRAMS

	Congruent Teacher Control	Incongruent	Congruent Child Control
Bank Street n = 2358	33.5%	27.1%	39.4%
Open n = 1413	37.1%	22.6%	40.3%
Engelmann-Becker n = 2327	61.7%	34.8%	03.4%
Bushell n = 1228	16.5%	53.5%	30.1%

χ^2, p = .01

n = # of thirty-second intervals observed.

requires them to attempt to create a setting of moderate teacher control and often results in an inappropriate mix of teacher and child controls in the setting. The mix is considered inappropriate because it results in incongruent conditions of control which in turn results in a relatively high percentage of off-task behavior.

Consistent with their program rationales, the children observed in the Bank Street and Open classrooms spent about equal time in teacher controlled and child controlled settings. Consistent with its program rationale the children observed in the Engelmann-Becker classrooms spent much more time in teacher controlled settings than in child controlled settings, 61.7% and 3.4% respectively. The children in the Bushell program spent more than half of their time in incongruently structured settings, 53.5%, in an attempt to let the child learn the specified first priority skills at his/her own pace.

D. Summary.

The distribution of the seven descriptive variables for the four educational programs discriminates between the programs and the descriptions match the program rationales. The ability of the variables to discriminate between programs established the validity of the variables for an analysis of the relationships between the variables in terms of the dependent variable, on-task/off-task, when the behavior stream records for the children from all the programs are pooled together.

The hypothesis that congruent (internally consistent) distributions of controls in the learning settings result in more goal directed behavior by the learners (less off-task behavior) than incongruent distributions of

control is strongly supported by the data analysis. Congruent positions on the four control variables, pacing, task options, material responsiveness, and child-child interaction resulted in less off-task behavior than did incongruent positions.

The distributions for the four educational programs for congruent teacher controls, congruent child controls, and incongruent controls conformed again to program rationales and program educational objectives.

REFORMULATION OF THE ARGUMENT

We think we have presented considerable evidence for the hypothesis that congruent controls in an educational setting lead to more on-task activity than incongruent controls. At this point, we would like to approach the matter more theoretically. The language of the argument does not have to become more obscure. However, it will be useful to try to reformulate the variables that we have used for the analysis so far so as to make them more consistent with one another. We should also recognize that other variables figure in the educational environment.

One result of the reformulation ought to be that the predictive power of the general hypothesis is improved. What we mean by this, however, needs to be understood. One reformulates the variables in order to make the hypothesis work, and thus levels of, say, high, medium and low teacher control of some element of the environment are stipulated in such a way as to increase the orderliness of the data. It is not just a question of " finding" the appropriate cutting points in reality, but rather one of setting and adjusting the cutting points to maximize the order that is hypothesized. If one in fact succeeds in increasing the predictive power of the hypothesis in this way, then the utility of the hypothesis is further confirmed. In this section we will redefine the control and goal variables of the educational environment; we will briefly interpret our own and Soar's Follow Through data with reference to these

revised variables; and we will point to some implications of the theory and findings generally for the design and evaluation of educational settings, particularly in Follow Through.

1. Redefinition of the control and goal variables of the educational environment.

We are speaking of the application of a general dimension of control to a number of variables in the educational environment. The general dimension proceeds from teacher control, through joint teacher and learner control, to learner control. This dimension will be applied to six control variables of the educational environment, and will be related isomorphically to one goal variable.

Control Variables

a. TASK OPTIONS: The choice the learner has about the particular task in which he is engaged. (1) Prescribed, no choice; the learner must do this activity now. (2) Conditionally prescribed; the child may choose his task from a set of prescribed alternatives (you may do x or y or z at this time) or he has elected to do now a task that is prescribed for sometime during the day. (3) Open choice; an activity that is not prescribed for the learner.

b. PRESCRIPTION OF OPERATIONS: The degree to which the operations of a task may be determined by the learner. (1) The step-by-step operations of the learner's activity are virtually completely prescribed. (2) The operations are partially prescribed (for example, a child may write any story about a picture he draws, but the story may not start with the words "This is..." (3) The operations are not prescribed.

c. PACING: The degree to which the learner is free to regulate his work rate or energy output. (1) High teacher pacing; the teacher is continuously present in the learner's setting, and continuously makes demands of some sort. (2) Medium teacher pacing; the teacher regularly enters and leaves

the learner's immediate vicinity (for example, in taking turns looking at different children's work on some regular basis over a half hour or so). (3) Low teacher pacing; the teacher is basically absent from the learner's immediate setting, though she/he may come to the learner occasionally on her/his own or the learner's initiative.

d. TEACHER ADAPTIVENESS: The orientation of the teacher's interactions with the learner to the learner's point of view as different from the teacher. (1) The teacher does not alter his/her behavior with the learner to reflect the point of view of the learner. (2) The teacher alters his/her behavior, but with the intent more of enabling the learner to meet the teacher's criteria for a task or action. (3) The teacher alters his/her behavior with the intent of enabling the learner to meet his own, individuated criterion for a task or action.

a. MATERIALS FEEDBACK: The degree to which the material the learner has in hand confirms the learner's answers to questions the material poses. (1) No feedback, for example a worksheet with no answers, or no material in hand at all. (2) Single answer feedback, for example, a workbook with answers in the back. (3) Multiple answer feedback, for example, a rabbit or pendulum.

f. INTERACTION BETWEEN LEARNERS: The degree to which the occurrence of interaction between learners is optional. (1) The occurrence of learner-learner interaction is virtually completely prescribed, i.e. prohibited or mandated. (2) Interaction among learners is allowed under certain restrictions pertaining to the task (for example, each learner must fill in his own worksheet.) (3) Learner-learner interaction is virtually optional for the child.

Certainly other control variables might be included in this basic set. For example, one might expect the initiation of teacher-learner interactions to be controlled (1) largely by the teacher, (2) more or less equally by the teacher and learner, and (3) largely by the learner. Likewise, one might expect the control of the learners' physical movement in the classroom space to conform to the general control dimension in this way. Again, the nature of the truth

finding processes that, in a basic epistemological sense, the learner is expected to engage in might be categorized as (1) receiving truth (or right or beauty) (2) discovering truth through a rational procedure and (3) constructing truth through an interaction of given or objective and subjective criteria. However, we have not looked at our data systematically from these points of view, and leave this as part of the unfinished business of generating and adjusting the full set of variables needed to operationalize the general dimension of control.

Goal Variable

COMMUNALITY-INDIVIDUATION OF THE GOAL: The degree to which the educational goal gives priority to common or, conversely, individuated learning and development. Intellectual, social, physical and emotional learning and development are equally involved in each of these categories of educational goals. (1) Transmission of common knowledge, traditions, and experiences; virtually no individuation. (2) Partial individuation; the operationalization of specific competencies or the internalization of concepts, skills, and dispositions. (3) Major individuation; the cultivation of individual and collaborative venture, or the application of knowledge etc. to exploration, problem solving, and expressive design or composition.

Whereas the commonplace pedagogical interpretation of " traditional" represents it only as a sterile transmission of arbitrary facts, we feel strongly that a richer and deeper interpretation is called for, and our type 1 category of goals attempts to represent this. Arbitrariness is especially involved in type 1 learnings, for example, the names of numerals and other symbols. Thus children's learning to chant " 1,2,3,4,5" or "A,B,C,D,E" involves arbitrary associations, and must be recognized as such as the Engelmann-Becker

recitation and Sesame Street do indeed recognize. More profound things are at stake, however, in this category. Origin stories, ceremonies, the names of significant persons, places, and things, these and much more are involved in the transmission of a common culture. Communality or solidarity is itself the principal aim or result of the transmission of common knowledge, traditions, and experience, so long as the teacher represents to the learner a shared culture, not an alien culture to be imposed on the learner. "Traditional" teaching, which we associate not only with type 1 goals but with the whole array of type 1 setting conditions, has been abused to the extent that it has been used in disregard of the learner's culture, and as it has been used inappropriately to demand the operationalization of specific dompetencies that we would characterize as type 2 learning and development.

It may seem outrageous to the reader that we have lumped all skill and concept learnings and the dispositions that attend them, in a single category of goals that might include, say, most of Bloom's taxonomy of cognitive objectives and their motoric and affective counterparts! We will argue, however, that this is a matter of focus. Consider, for example, "problem solving," which is sometiemes represented as a "skill." To convey the importance of problem solving, or the significance of some individual as a problem solver, might be thought of as a type 1 goal. Thus George Washington Carver would be celebrated as a problem solver. To focus explicitly on the heuristics of problem solving--

stating a hypothesis, gathering data, evaluating the hypothesis in terms of the data, etc. -- can be approached as a type 2 goal. To solve a problem, which means to have and feel the problem in the first place, is probably too complex and open-ended a goal to be thought of simply in the heuristic or algorithmic manner of type 2 learnings, and is thus best thought of as a type 3 goal. To give a perhaps more readily imagined example, a teacher can model an addition algorithm to convey its importance to the learner and alert the learner to its significant parts, can facilitate the learner's operationalizing the algorithm as a concept-skill, and can cultivate the learner's application of the algorithm to a question of personal interest. Presumably the three types of goals would complement one another. Indeed, it is our conviction that all three types of goals are essential to an educational program, and that programs typically under-represent one or another of them.

2. The relationship of the revised scheme to our own and Soar's data.

Our basic hypothesis continues to be that an educational setting will be more effective to the extent that the controls in the setting are congruent. Operationally, this now means that the most effective settings will consist of all 1's, 2's or 3's on the setting control variables, and that settings will be ineffective to the extent that they mix 1's, 2's, and 3's simultaneously. So far, we have used attentiveness or involvement, represented by percentage of on-task behavior, as an immediate index of setting effectiveness. However,

the goal variable has been defined in such a way as to suggest the type of learning and development that will be most effectively accomplished in each type of setting. Thus, one can test the hypothesis by measuring not only on-task behavior, but the learning and development per se that each goal type represents.

Only two of the six setting control variables, prescription of operations and pacing have been retained in the form that was used in our analysis of child behavior streams. The pacing variable has clearly proved itself, although further studies would suggest how it could be interpreted more precisely, especially in relation to what different individual children perceived as high, medium, and low teacher pacing. In other words, the frequency with which a teacher needs to return to one or another child in order to establish the regularity of joint teacher and child control of the pacing seems to vary. The generalized judgments that were made in the coding of the child behavior streams only approximate the pacing variable, and more specific judgments could be made in a more clinical approach to the behavior of particular individuals.

The prescription of operations variable has not proved itself so far in our analysis. We have included it in the revised scheme because theoretical considerations point to the degree of prescriptiveness of operations as a crucial control variable, and because we have observed variations in this that, in some instances at least , seemed to figure importantly in the learner's behavior.

Soar's factor analysis, which we will comment on below at greater length, associates " highly focused learning tasks" more with concrete-simple growth, and " moderately focused learning tasks" more with abstract-complex growth; as the test items corresponding to these two types of growth approximate our type 1 and type 2 educational goals respectively, there may be some evidence here for the relevance of the prescription of operations variable. This is an example, then, of the problem of our learning how to set the most useful cutting points for the three positions of the variable. Again, the variable will be more powerful to the extent that we can relate it to individual learners' perceptions of the degree of operations prescriptiveness involved.

The options variable that we used for our initial coding of the child behavior stream observations did include two "conditionally prescribed" variations. However, these variations occurred too infrequently in the observations to be condensed as a type 2 options variation, and we condensed the variable to just the two variations reported in the analysis, "prescribed and "open". In subsequent, casual visits to other classrooms we have seen the conditionally prescribed options variation used quite effectively for skill and concept tasks; for example, we observed a first grade classroom that required that children complete a task at each of 5 "learning stations" over the course of a day, but that gave the children control over the order in which they worked at the different learning stations. Our definition of the type 2

conditionally prescribed option specifies that the prescription represented by the learning stations approach should be operative over the course of a single day. The precise setting of such a time limit is, of course, another matter for further study. At present, however, we would not classify as a type 2 option the arrangement we saw recently in another classroom, where the children were expected to complete each of a set of tasks at some time during the week, this time span seeming to us to be too broad to be effective except at the end of the week !

Teacher adaptiveness is not included in the analysis above. Our Fifth Progress Report included a brief account of our earlier analysis of teachers' adaptiveness in the child behavior streams. The variable used for this recognized only two categories, adaptive or non-adaptive, the latter defined as a teacher's change of behavior toward a child in recognition of the behavior perspective of the child. Teachers' adaptive responses were found in 29% of the 30 second intervals containing teacher-child interactions in the Bank Street classrooms, 26% in the Open classrooms, 19% in the Bushell classrooms, and 16% in the Engelmann-Becker classrooms. The rank order of these has some plausibility in terms of the relative distributions of teacher and/or child controlled settings in these programs. On the other hand, the rationale of any of these programs calls for more teacher adaptiveness than was observed. Bushell's "behavior analysis" program, for example, obviously assumes that the

teacher will analyze the learner's behavior and adapt to the learner so as to facilitate his conforming to the teacher's task criteria. In the Engelmann-Becker program one might expect to see this type 2 teacher adaptiveness in the take-home setting, though one would expect not to see it much in the group recitation setting. The Bank Street and Open program rationales lead one to expect type 3 teacher adaptiveness in these programs particularly.

Materials feedback is a control variable insofar as the feedback available to the learner from a source other than the teacher gives the learner self-control of his learning activity. Our formulation of this in terms of materials confirming no answers, single answers, or multiple answers is an attempt to conceptualize what we observed in more concrete terms. Only in a couple of highly ritualized games did we observe children being given the use of manipulable objects under otherwise highly teacher controlled conditions; manipulable objects were observed most frequently under the opposite, highly child controlled conditions. Programmed workbooks with answers in the margins, SRA materials with answer cards, flash cards, copying exercises (either in a workbook or from the board) were associated almost exclusively with prescribed concept-skill tasks that children did under medium or low teacher pacing. Children having no materials at all occurred only under conditions of high teacher control. In the analysis described earlier in this report, manipulable objects and programmed workbooks with answers etc. were condensed into one category, "high feedback

materials". Therefore we have not tested the distinction called for in the revised scheme. We do know that few manipulative materials were used for prescribed, first priority tasks under medium or low teacher pacing; we therefore know that the "high feedback materials" that contributed significantly to children's being on task in these settings, by comparison to low feedback materials, must be the single answer materials of our category 2. Single answers, of course, are the answers to the questions the teacher has in mind in preparing the materials for the learner. Multiple answers are typically those contained naturally in the material itself (i.e. "naturally" in relation to the material's natural or regular function), as, for example, the rabbit will in time answer the question what happens to a rabbit when you do not feed it. Multiple answer materials thus lend themselves more readily to the unprogrammed questions of the learner himself, and for this reason seem to be as inappropriate for a highly teacher controlled setting as they are appropriate for a setting intended to maximize the learner's control. As with every other variable, we have further questions about the materials feedback variable. What feedback is there in an unprogrammed storybook, for example? We would guess that this is type 1 material for the learner who is struggling to decode it word by word, and perhaps even type 3 material for the learner who is reading it steadily for meaning.

The revision of the child-child interaction variable used in the analysis above to the learner-learner interaction variable of the new scheme is conceptually

the most basic of all these revisions, though at first it may not appear to be that different. Consider the categories one at a time. The old scheme defines the type I category simply as child-child interaction prohibited or discouraged, whereas the new scheme defines it as learner-learner interaction prohibited or mandated. It was our reflection on the nature of the rituals, ceremonies, music and dance, games, etc., which might be conducted as type I activities, that led us to see the larger range of learner-learner interaction possibilities that could be controlled by the teacher. In fact, the only first or second priority activity that we recognized as involving prescribed learner-learner interaction under high teacher pacing was one that combined language arts questions with a pass the hot potato game! But might it not be valid to think of the unison or mass responding of the Engelmann-Becker choral recitation as a type of learner-learner interaction? If one values individuation over communality, as pedagogical ideologies typically do, one does not see the mass response as a learner-learner interaction. Still the children are, or can be, very much aware of one another in this responding: listening to each other for cues, appreciating one another's being right, enjoying the feeling of saying things together, and so forth.

The old type 2 category said simply that child-child interaction was allowed or tolerated, whereas the new specifies that it is allowed under certain conditions relating the interaction to a task. In a way, the old category reflects the same casualness or disregard of the potential for joint teacher and learner control of the learner-learner interaction that we observed more often than not in the classrooms themselves. The children might have been, for example, encouraged to assist one another

in various ways, at the same time that they were held responsible as individuals for the correctness of their work. In the absence of such a policy, the learner-learner interactions that were most often recorded under otherwise type 2 conditions consisted of borrowing erasers, comparing where each other was at in his task, and interacting off task. Two examples of partially prescribed learner-learner interaction that we did observe under medium teacher pacing were a science experiment conducted by one of our subjects and another child, and a cooking lesson involving one of our subjects and other children.[5] (See page following for this footnote.)

Finally, the old type 3 category recognizes only those situations where cooperative interactions are necessary to certain tasks, whereas the new category also recognizes situations where the learner elects to be alone. The difference between the mandated learner-learner interaction of the type 1 setting and the voluntary interaction of the type 3 setting lies essentially in the greater degree of sub-task or role differentiation that the latter calls for, as for example, one child rather than the teacher is the leader and the other the follower. The difference between the aloneness that is possible in a type 3 setting and either of the other settings lies in the possibilities for the child's being engaged in a task that is his or hers alone, whether it be reading a book, painting, or any other task.

If the revised learner-learner interaction categories were used in a new analysis of our data, they would undoubtedly bring our findings into still closer approximation to the patterns predicted by the congruency hypothesis. This is so because the revision would not affect the relationships obtained under type 1 conditions, only relabel them, (except in the game instance mentioned above), while they would deal

5. A still more radical way of construing the entire type 1 setting results from a further extension of this thinking about learner-learner interaction and its connection, especially, to ritual behavior. Not only the learners', but the teacher's interaction and behavior more generally might be construed as prescribed in the type 1 setting. Certainly the role of the teacher in the Engelmann-Becker recitation is consistent with this interpretation. So too might be the teacher's behavior in relation to a religious or patriotic or literary or musical text, from which the analogy to ritualized treatments of a textbook might not be too farfetched. Of course, the rituals that survive in contemporary classrooms are mostly shadows of traditional rituals; as Waller observed some time ago, the extracurricular ceremonies of the school are more effective in developing and sustaining solidarity or community than the rituals of the curriculum itself as we know it.

Images of Wagner and Hitler may be stirring in the reader's head. Type 1 settings can be exploited in this way. More positive implications, from the standpoint of our own values, have been suggested to us by our reading of two essays contained in Courtney Cazden, Vera John, and Dell Hymes (editors), Functions of Language in the Classroom, New York: Teachers College Press, 1972. In Stephen Boggs's essay, "The Meaning of Questions and Narratives to Hawaiian Children," the children's positive response to their being addressed as members of a collective including themselves and adults is contrasted with their negative response to being addressed, by the teacher or the adult observer, as individuals. (A teacher's addressing children as individuals, in this sense, is in fact more appropriate to a type 2 or a type 3 setting, which throws a rather interesting light on the relative efficacy of "indirect" styles of teacher-student interaction in whole class discussion settings.) In Susan Philips's essay, "Participant Structures and Communicative Competence: Warm Springs Children in Community and Classroom," observations similar to the above are made, and in addition it is observed that a sharing or shifting of leadership roles can occur among several, if not all, of the participants in a communal setting. In the most ideal type 1 setting, therefore, the knowledge distance and the social distance between teacher and learner are reduced as they stand in a common relationship to the rite or text, and as they share the initiation and maintenance of the activity. How this would be distinguished from our type 3 individuated collaborative setting is just one of the many questions that we have only started to probe.

with a variety of anomolies in the type 2 and type 3 regions of the analysis, particularly the high off-task behavior that is associated with a number of instances of learner-learner interaction permissiveness that might be categorized as incongruent 3's instead of, as at present, congruent 2's; and because of other instances of high on-task behavior presently associated with incongruent 2's that should become congruent 3's.

We mean to claim more generally that the revisions of our control variables would result in stronger confirmation of the basic hypothesis. There are two obstacles to a further analysis of our data, however. First, we could not simply recondense present codes, but would have to recode the raw data itself for at least three of the six control variables. Second, certain of the new categories are severely underrepresented in the data, particularly options 2, teacher adaptiveness 2 and 3, and learner-learner interaction 2, apart from other distribution problems pointed to in the analysis above. Since it is now feasible to conduct a directly coded observation of an individual learner, noting changes on the control variables as these occur and keeping track of the task orientation of the learner's behavior, we look forward to applying the scheme to new data.

Soar's Follow Through research seems to us to provide unanticipated confirmation of our general theory (or ours of his!). We know of his findings only from the article by Robert S. Soar and Ruth M. Soar, "An Empirical Analysis of Selected Follow Through Programs: An Example of a Process Approach to Evaluation," in Ira J. Gordon (editor), Early Childhood Education, The Seventy-first Yearbook of the National Society for the Study of Education, University of Chicago Press, 1972.

This study is too complex for us to pretend to summarize it adequately here, but we would like to highlight certain of his findings from our point of view.

Soar observed a variety of classroom processes and setting characteristics, especially from the standpoint of various contrasts that the progressivists would consider important. Unlike CCEP, Soar obtained Stanford Research Institute test data for the classrooms he observed, and thus he related observation and test data.

The first section of Soar's report discusses some results of his factor analyses of observation data to determine which factors discriminated most strongly between Follow Through programs. Data obtained with the Florida Affective Categories System yielded a first factor, "free choice vs. structured learning in groups," which Soar interprets as "diverse activities in which the pupil is apparently free to choose what he wants to do and how he wishes to do it... [vs.] the existence of a task group, which would be checked only for an activity which had been specified by the teacher or an aide." Data obtained with the Teacher Practices Observation Record yielded a reverse but parallel first factor, "teacher directed activity vs. pupil selected activity," which Soar characterizes as follows: "Apparently the key distinction between the two poles of the factor is whether the teacher organizes, directs, and reinforces the activities that go on in the classroom in contrast to providing considerable freedom for the pupil to select and carry out what he wishes." As we examine the various items associated with these two factors, many of them pertain directly to the variables we have identified as control variables.

Up to a point, one could say of these descriptive findings simply that both we and Soar found what we were looking for, or ended up describing programs in the terms

that we were committed to as meaningful from the outset. However, as Soar rightly points out, these variables do discriminate between programs. They do so because, fundamentally, the variables are meaningful to the program sponsors themselves, who have thus designed their classrooms with these very same variables uppermost in mind.

Soar performed a factor analysis of first grade regressed gain scores from the Metropolitan Readiness, Early Childhood Inventory, and Preschool Inventory tests, all administered by SRI. On the following page we reproduce Soar's table showing the results of this analysis. Alphabet and numerals are the measures loading most heavily on a "simple-concrete" factor. Word meaning, copying, shape names, associate vocabulary, and concept activation sensory, are the measures loading most heavily on a "complex-abstract" factor. We recognize the first cluster of measures as some of our type 1 or common learnings, and the second cluster as what we have called type 2 or concept and skill learnings. Type 3 learnings are least appropriately measured on a standardized test, and so there is no reason to expect them to have emerged in this analysis.

Two figures Soar presents to show relationships between observation and test data are reproduced by us on the two pages following. Soar comments on the first, Relation between Teacher Practices Observation Record factor I and pupil growth, as follows:

> Figure 3 suggests that teacher behavior on this factor may only be slightly related to pupil growth on the simple-concrete measure, if at all, but that it relates in relatively strong nonlinear fashion to pupil growth on the complex-abstract measure. These data appear to agree with earlier findings indicating that moderately high levels of freedom, within the samples studied,, seem to be most functional for complex growth, and to suggest agreement that simple learning is increased by greater teacher direction, but at the expense of complex-abstract growth. (Soar and Soar, 1972, p. 251.)

SOAR AND SOAR

TABLE 3

FACTOR ANALYSIS OF FIRST GRADE REGRESSED GAIN SCORES

SUBTEST DESCRIPTION	FACTOR TITLES	
	Complex-Abstract	Simple-Concrete
Metropolitan Readiness		
1. Word meaning	.49*	.03
2. Listening	.36	−.07
3. Matching	.39	.20
4. Alphabet	.24	.58*
5. Numbers	.33	.29
6. Copying	.44*	.14
Early Childhood Inventory (Deutsch)		
1. Alphabet	−.09	.71*
2. Numerals	.19	.62*
3. Shape names	.46*	.18
Preschool Inventory (ETS)		
1. Social responsiveness	.39	.38
2. Associate vocabulary	.54*	.35
3. Concept activation numeric	.33	.22
4. Concept activation sensory	.42*	.13

* Measures loading .40 or over were carried into factor scores.

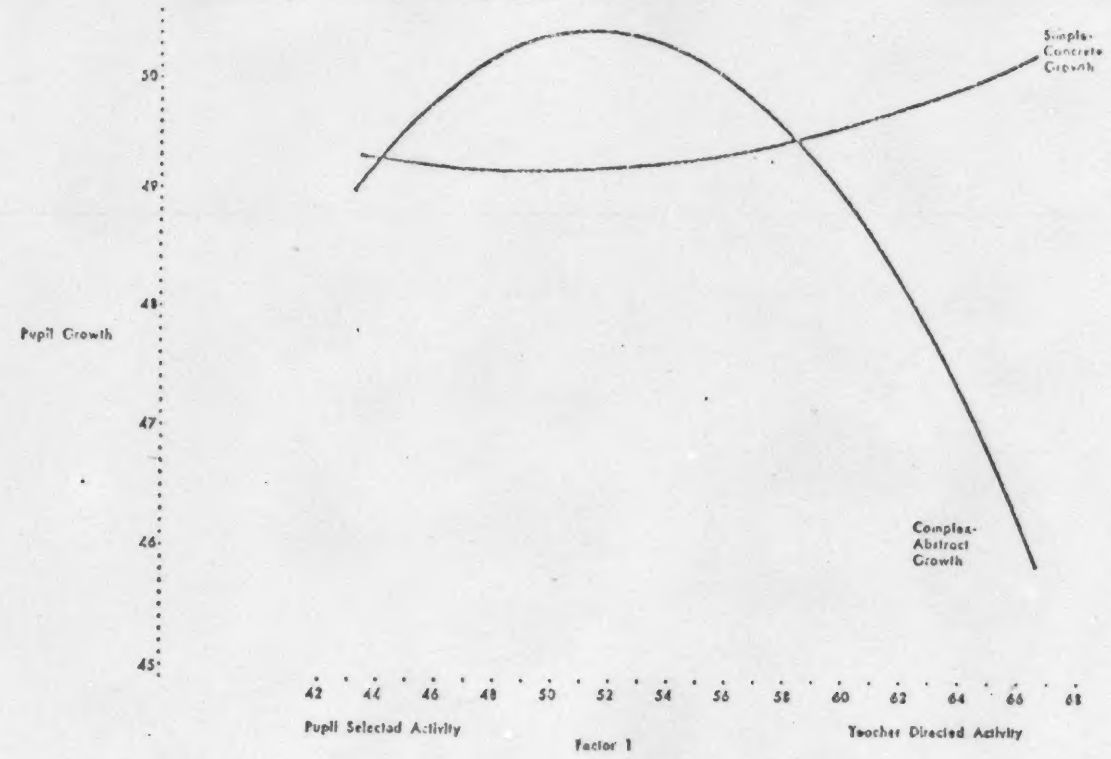

FIG. 3. Relation between Teacher Practices Observation Record factor 1 and pupil growth

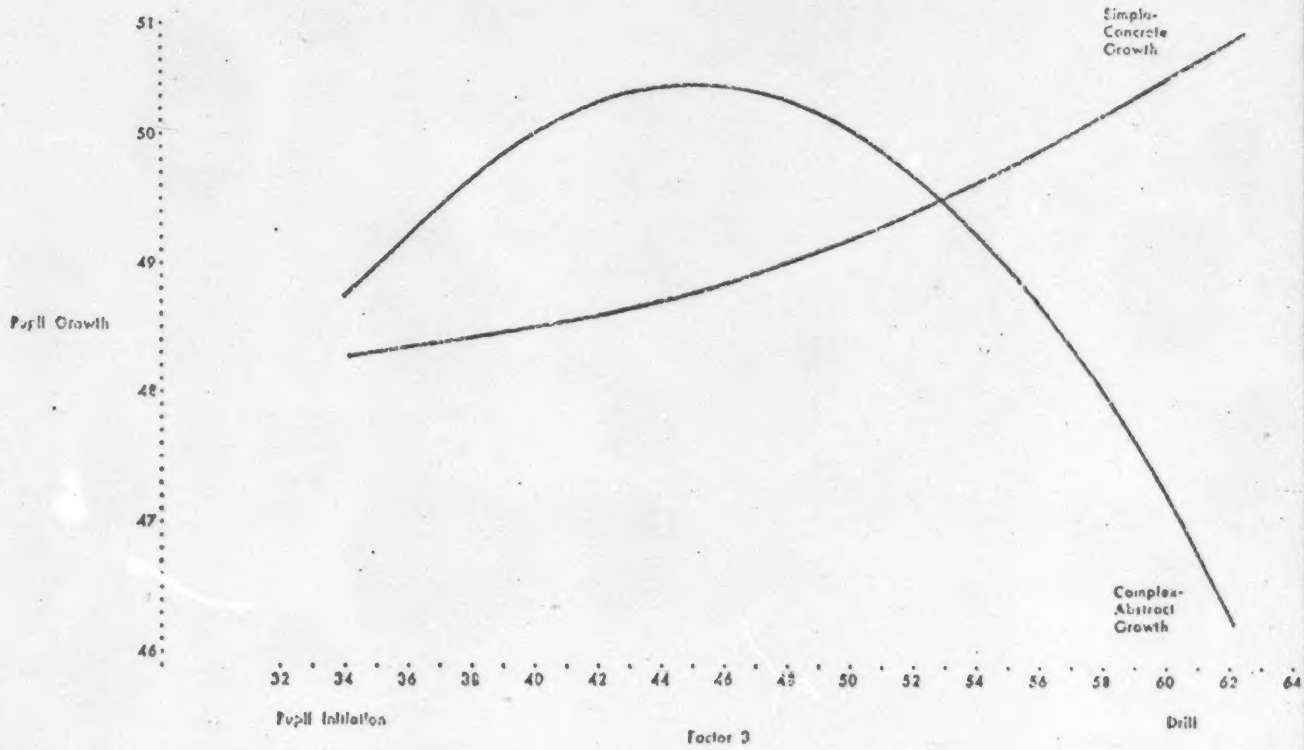

FIG. 4. Relation between Reciprocal Category System factor 3 and pupil growth

Soar comments as follows on the second of these figures, Relation between Reciprocal Category System factor 3 and pupil growth:

> The question of an optimal balance between drill and pupil initiation is examined in Figure 4. The figure suggests that increased amounts of drill may be functional for simple-concrete growth and that an optimal balance between pupil initiation and drill is a condition for a maximum of complex-abstract growth to take place. But the aspect of the relationship which appears strongest is the indication that greater than optimal amounts of drill are strongly destructive for complex-abstract growth. (Soar and Soar, 1972, p. 254.)

Soar discusses several more specific findings that contribute to the general patterns above. One of these is that "teacher talk rather than pupil talk [pupil-pupil talk and steady-state student talk especially] is associated with abstract growth on the part of the pupils." (Soar and Soar, 1972, p. 250.) Soar subsequently qualifies this statement, on the basis of an additional finding, as follows:

> The indication that both pupil-initiation and exposure to a model of adult language relates to pupil abstract growth suggests that a balance between these activities may exist which is optimal for pupil growth. (Soar and Soar, 1972, p. 251)

Another more specific finding has to do with what Soar characterizes as "teacher neutral control vs. teacher support in task settings," which correlated negatively with pupil complex-abstract growth. Teacher neutral control seems to represent situations where the teacher is basically absent from the immediate pupil setting, with the pupil engaged either in play or in a highly teacher-planned task, and with the teacher occasionally intervening to supervise the pupil closely or to interrupt the pupil's activity. Teacher support in task settings, by contrast, seems to represet a more continuous pattern of the teacher's moving in and out of the pupil's setting, to solicit information from the pupil and to give positive nonverbal support. Soar comments on

this,

> The possibility which the relation between these factors suggests is that a distinction may be useful between "structure" and "control." In a sense intended here, structure represents a set of standard operating procedures which the teacher and the pupils understand in common. The sequence of activities which is followed daily and the limits of behavior which pupils understand and accept would be examples. In contrast, control would be made up of the moment-to-moment, face-to-face interactions between teacher and pupils intended to modify the behavior of the pupil. It seems possible that teachers who structure classrooms least occasionally feel the need for firmer controlling behaviors. While this interpretation is post hoc, it fits the data, seems reasonable, and the distinction can be seen readily in classrooms, once an observer is aware of it.

What Soar calls "structure" here is what we would call a regular and internally consistent distribution of controls over the elements of a setting. Soar comments on this further as follows:

> Interestingly, the programs which represent most and least structure of pupil activities on TPOR I and FLAC I completely reversed positions on FLAC factor 6 [neutral control vs. support]. That is, the most structuring teachers on either of the first factors became the least likely to stand high on FLAC 6 (highly controlling behavior) and vice versa. (Soar and Soar, 1972, pp. 246-247.)

Presumably some of the settings Soar has in mind when he speaks of seeing these distinctions in the classroom are the Engelmann-Becker takehome setting and the Bushell earn setting, especially in their more internally consistent forms, vs. those settings in a putatively open classroom which are less consistently structured for skill and concept learning.

We will clarify the qualification attached to the Engelmann-Becker and Bushell settings a little further on. First, let us make some of the most obvious connections between Soar's findings and our hypotheses.

Soar finds some evidence, though it is not very strong in his own data, for type

I learnings being accomplished best in type I settings. Numbers and the alphabet, while we used them earlier ourselves to illustrate type I learnings, may not be the most powerful items to test this part of the hypothesis. In the first place, we often felt in the Engelmann-Becker classroom that the countdowns and alphabet recitations represented overlearning, serving as much to "warm up" the group or to provide good feeling in the group, as to teach the numbers and alphabet per se, at least at the second grade level where we did our observations. Secondly, many other learnings that we would construe as type I are not so directly related to skills and concepts. Thus, they are not so all pervasive in the curriculum, and, further, they are not represented on the tests SRI used. For example, much information about Black history that would be appropriately transmitted to children in a type I setting is not represented on the tests. This is not to say that we think tests of this sort would be valid indicators of the children's learning. The most operational test of the successful transmission of common knowledge might be the children's transmission of it in the same form, that is, their ability to tell the life stories, sing the songs, and participate in the rituals of their culture.

The evidence for the efficacy of type 2 settings for skill and concept learning seems to us to be very clear in Soar's data. A misinterpretation that Soar's method of analysis may make possible, however, is that "some of both" -- some highly teacher controlled activity and some highly child controlled activity -- is an appropriate way to obtain "medium" teacher control. The very method of labeling only the poles of the factors plays into the polarization of "traditional" and "progressive," "teacher centered" and "child centered," or "open" and "closed," that is already endemic in Ameri-

can pedagogy. We have chosen to subtitle this report, "Toward a Political Pedagogy," because pedagogy is, in fact, already highly politicized, and education needs an adequate frame of reference to deal with this. More specifically, it is much easier to find consistent teacher controlled settings and consistent child controlled settings in classrooms than to find the consistent joint teacher and child controlled setting that both theory and data point to so strongly as crucial.

Why the type 2 setting is most appropriate for the teaching of skills and concepts has to do with the process of an individual's operationalization or internalization of the algorithms of skill and concepts. Because a somewhat variable, as well as reversible, sequence of operations must be synthesized with the individual's own cognitive schemata, sensory modalities, rhythms, and so on, the process occurs most satisfactorally when the individual can give some direction to the process, can resort to feedback when he needs it, has some control over the timing and pacing of the activity, etc. At the same time, the teacher must represent society's expectations and conventions to the learner, and consistently throughout each aspect of the learning process.

As we recognized earlier, type 1 settings do probably contribute to skill and concept learning in some measure, especially through the modeling phenomenon that Soar comments on in a quotation above. Again, type 3 settings undoubtedly contribute to the consolidation of skills and concepts. The pivotal setting, however, must be the type 2. Bushell and Engelmann-Becker approach this when the workbook or take-home activities are conducted under medium pacing, with partial teacher adaptation and with single answer feedback material. They approach still closer to the type when children have conditional options, as they did in one Engelmann-Becker

classroom we observed where the children could control the sequence of the take-homes they work on, and in one Bushell classroom when the children were allowed to choose the areas they worked at in the day's last earn period. From the fact that some spontaneous instances of task cooperation occurred in the workbook and take-home activities we observed, it might be inferred that more instances of this would be possible to encourage in some way. Finally, some of the Engelmann-Becker take-homes gave children partial control over task operations, as, for example, the children made up their own sentences with words that were supplied, and then drew a picture to illustrate what they had written. In the Bank Street classrooms we observed several activities where joint teacher and child control had been established for most of the variables we are discussing: children presenting flash cards to each other, children conducting their own spelling contest at the blackboard, children helping each other copy a cooking recipe, and still others.

We have taken courage to say all this is possible because, only recently, we have seen some excellent examples of consistently structured type 2 settings being used for skill and concept teaching, with what looked like manifest effectiveness. Indeed, the reader is referred to Kim Marshall's excellent book with the improbable title, Law and Order in Grade 6-E, Boston: Little, Brown and Co., 1972, for an account of a classroom very consistently designed for skill and concept teaching. (The title comes from the children, and refers to a social studies focus in the year of disaster before Marshall introduced his system into the classroom!) Marshall set up 5 "learning stations" in the classroom and wrote, each night before class, worksheets for each table that reflected his students' current concerns and skill problems. The students

could choose the order in which they progressed from table to table, could work cooperatively on the tasks, and were expected to finish all tasks during the morning. In the afternoon they discussed and checked their answers as a class, and also engaged in activities focusing on Black history, art, and so on. On Friday of each week, the children took formal tests on the learnings of the week. Marshall does not claim that this system worked equally well for all the children. It is clear (from the photographs!, among other evidences) that the children and their parents were highly satisfied, and that Marshall's solution was more acceptable to them than either the open or the familiar "traditional" alternatives that they had experienced.

Contrary to what may seem to be implied in this discussion, the case for open or type 3 settings is just as strong as the case for the other two types. Only in these settings, with maximum child control supported by careful teacher design and high teacher adeptiveness, is it possible to realize a true individuation and fullfledged cooperation of the children in the classroom. The argument for this, ironically, is the least disputed among educators. It is confused by labeling as "open" a classroom that only half heartedly develops these settings, or that, conversely, attempts to construe them as appropriate for all purposes and ends up defending the confusion itself. Soar presents no evidence for individuated learning simply because the test results he used have no bearing on it. We could cite examples of it from the behavior stream records -- children's paintings, a model of the city around the Brooklyn Bridge, a report on volcanoes, and so forth -- but the only formal evidence we can present is the high involvement that was observed in consistently structured type 3 settings.

We do not know what to call a classroom that integrates the three settings and

their basic goals. An integrated classroom? A learning community? A name may not be so important in itself, but it is necessary to signal that the structure of the whole, the articulation of its parts, must have an organic quality that integrates the learning experiences of all its participants.

Implications for program design and evaluation in Project Follow Through

Since we have already stated a number of specific implications in the discussion above, we can point here to just three general issues that are particularly difficult to come to grips with.

First, it may be asked how we reconcile the fact that the two programs in which we observed children spending the most time in inconsistently structured settings, Bushell and Engelmann-Becker, seem to be teaching tested skills and concepts more effectively than other Follow Through programs. The simplest answer is that the children in these programs probably spend more time in test-like settings than other Follow Through children, settings that themselves are internally incongruous.[6] It seems quite possible to us that the teaching of skills and concepts could be improved in the Bushell and Engelmann-Becker programs by establishing more congruent conditions for this purpose, and by testing the children just frequently enough to monitor their progress and to teach them about test taking. Each program that we observed, and presumably others in Project Follow Through, has invented certain ingenious techniques for joint teacher and child control, and, more generally, for structuring one or another of the different settings that we recognize. A major outcome of Follow Through could be a deliberate pooling of these techniques.

(See following page for this footnote.)

6. The best predictor of academic skill and concept achievement in Follow Through should be the time children spend pursuing type 2 academic goals in congruently structured type 2 settings. Soars and Soars' (1972) data strongly supports this hypothesis. Congruent type 2 settings, however, are relatively scarce in the programs we have observed, and in classrooms generally, partly because the polarization of teacher and child centered pedagogies contributes to incongruous mixes of type 1 and type 3 controls. A fall back prediction, therefore, is that Follow Through children's academic achievement will be proportional to the time spent in a combination of type 2 and what might be characterized as more test-like settings, incongruent types 2 and 3, multiplied by the on-task percentages that can be associated with these different (academic) settings.

A second implication arises out of considering further the human effects of incongruous setting conditions. The very inconsistencies that one finds in classroom settings have been identified as the alienating conditions of many institutional and work settings. That one has to pace himself on a task that he does not choose, does not get adequate feedback to regulate his activity, or cannot integrate his work with his play, alienates the self from the setting and the task. It is ironic that any classroom should still be socializing children to these conditions at a time when they are becoming the focus of so much concern in adult society. CCEP's Pupil Role Interview, and its findings, may have some bearing on this issue. Certainly our on-task/off-task measure should be construed more profoundly than as merely an index of whether a person is doing the task that someone expects. The roles an individual takes and makes, and the goal orientations of his life stream, are fundamental to the life of the classroom.

Finally, a much more comprehensive idea of the goals of education should inform the evaluation of Follow Through. Though we do not claim to have worked out all of our present thinking at the time, CCEP's proposal to establish different observer-regulated learning settings, to observe children's behavior in these settings, and to evaluate the results of the children's activity by both achievement and developmental criteria, still appears to be the direction that a valid evaluation should take. If we are less than eager now to ask again for this assignment ourselves, it is first of all because we see the possibilities for so much further development of the Follow Through programs themselves before such an evaluation would be very meaningful.

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